TRAITÉ

THÉORIQUE ET PRATIQUE

DE

LA MÉTALLURGIE DU FER

A L'USAGE

DES SAVANTS, DES INGÉNIEURS, DES FABRICANTS

ET DES ÉLÈVES DES ÉCOLES SPÉCIALES,

COMPRENANT

LES FABRICATIONS DE LA FONTE, DU FER, DE L'ACIER ET DU FER BLANC,

ET PRÉCÉDÉ D'UNE INTRODUCTION

CONCERNANT LES PRINCIPES SUR LESQUELS REPOSE CETTE INDUSTRIE;

PAR

C. E. JULLIEN,

INGÉNIEUR,

ancien élève de l'école centrale des arts et manufactures, ex-ingénieur de l'atelier de construction du Creusot, du chemin de fer de Paris à Lyon, des forges de Montataire et des aciéries H. Petin, Gaudet et Comp. de Rive-de-Gier.

ATLAS.

PARIS ET LIÉGE,

E. NOBLET, LIBRAIRE-ÉDITEUR.

—

1861

CONS
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J85
1861

PARIS. — IMPRIMERIE DE MADAME VEUVE BOUCHARD-HUZARD,
RUE DE L'ÉPERON, 5.

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TABLE DES PLANCHES.

FIN DE LA TABLE DES PLANCHES.



MARTINETS A CAMES.

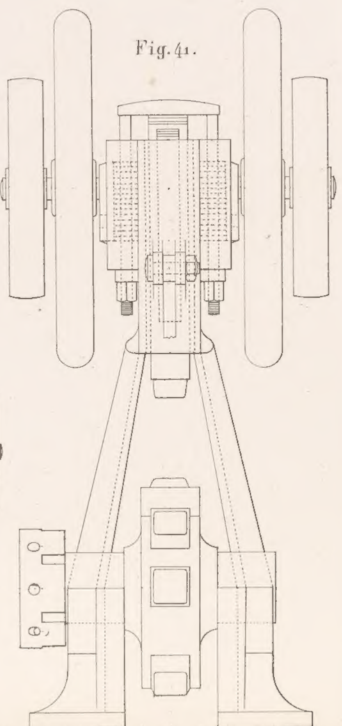


Fig. 43.

Fig. 45.

Fig. 44.

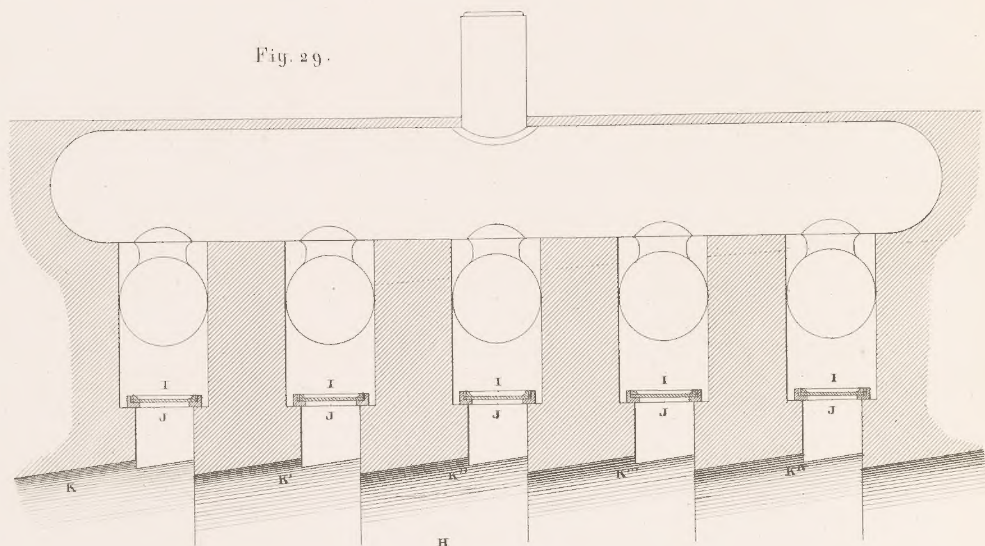
Système Schmerber

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Fig. 29.



Echelle = 1/50.

Fig. 32.

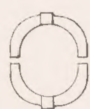


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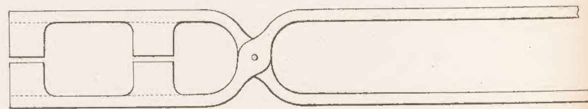


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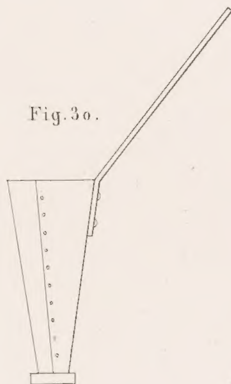


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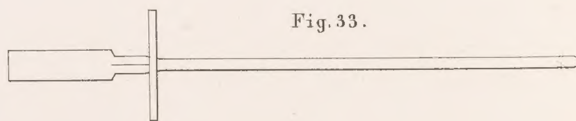
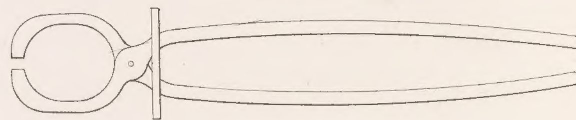


Fig. 34.



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Fig. 42.

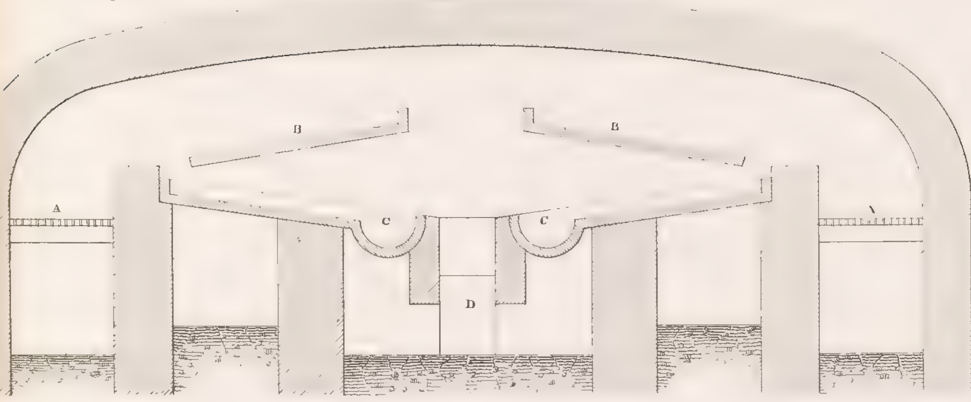


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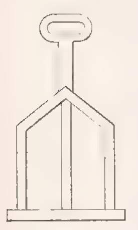


Fig. 40.

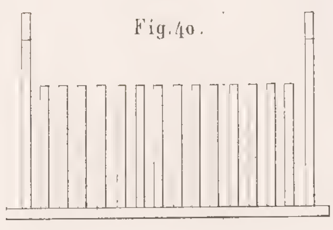


Fig. 38.

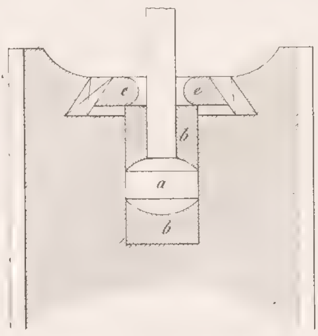


Fig. 39.

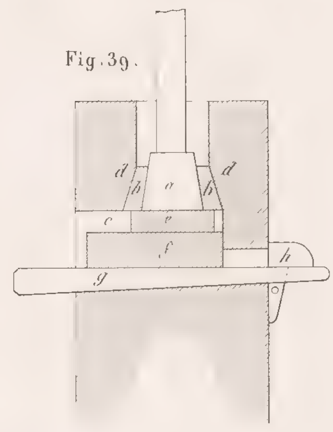


Fig. 35.

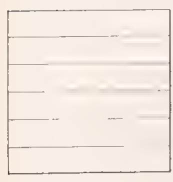
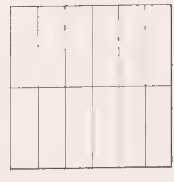


Fig 36.



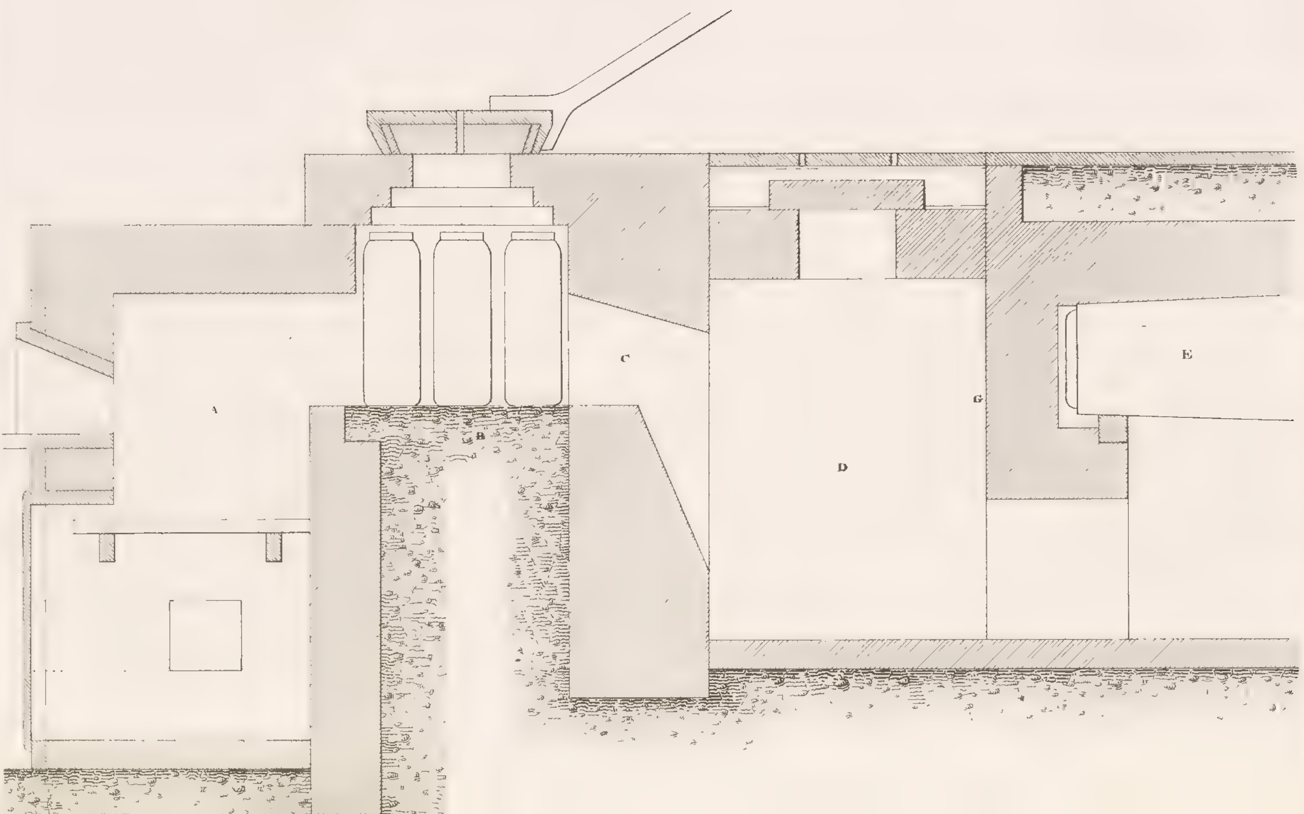
Fig. 37.



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Système Bouché.

Fig. 26.



Système Ballefin.

Fig. 28.

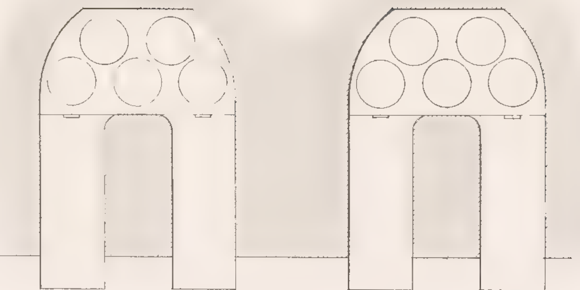
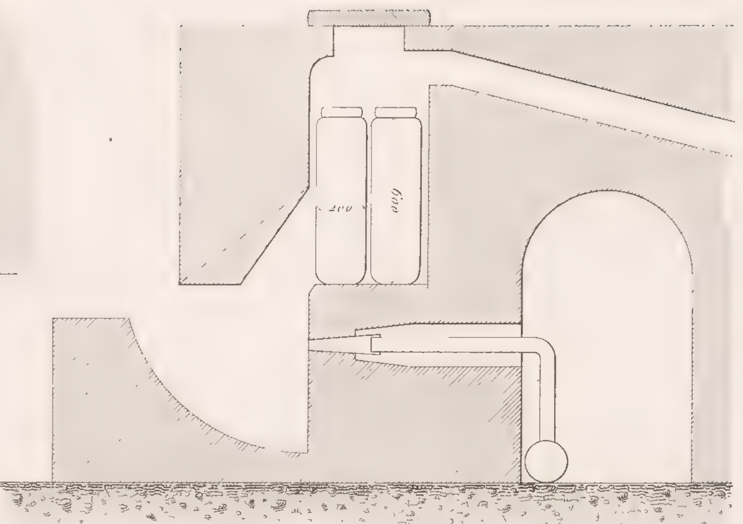


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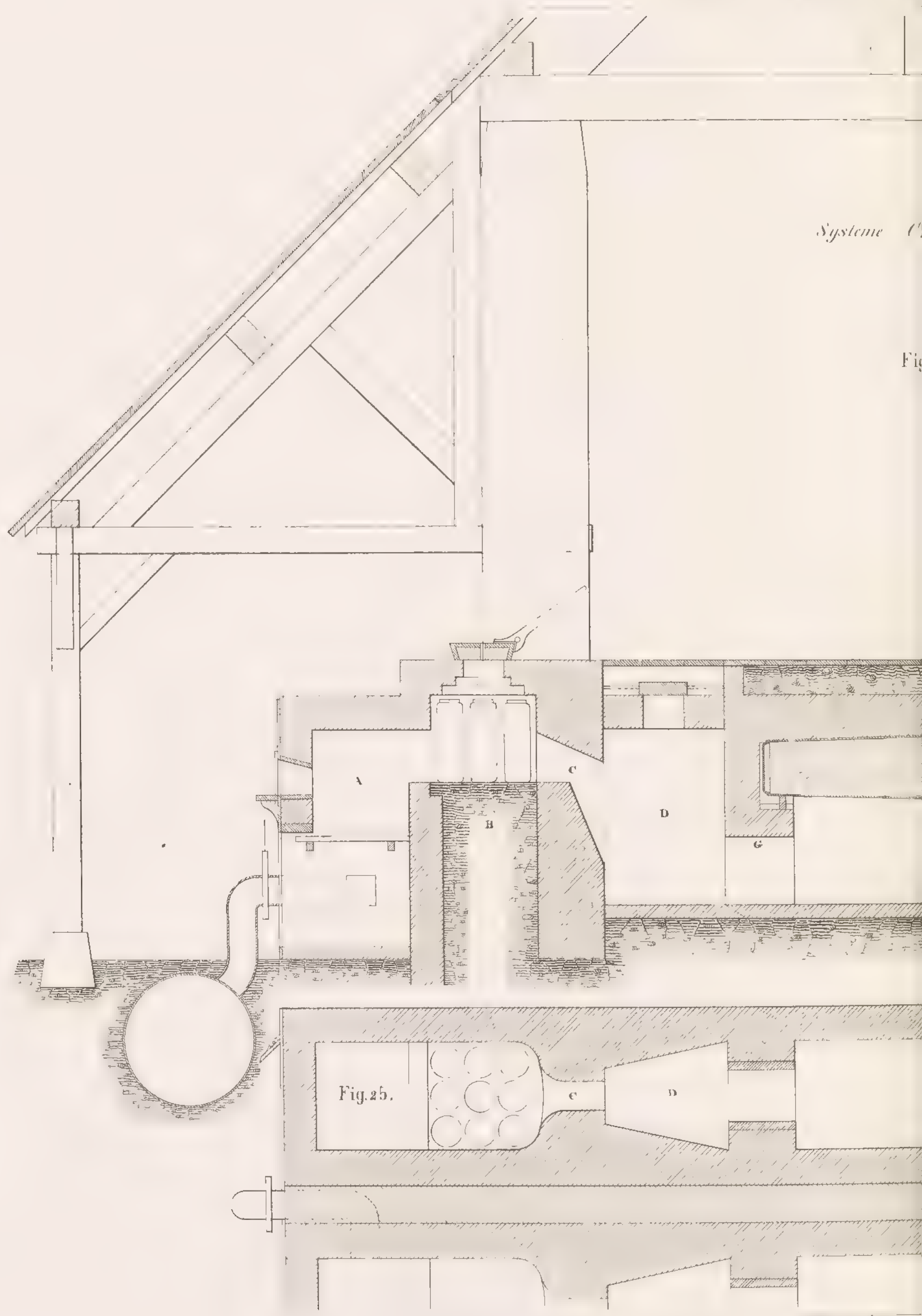


Echelle 1/20.

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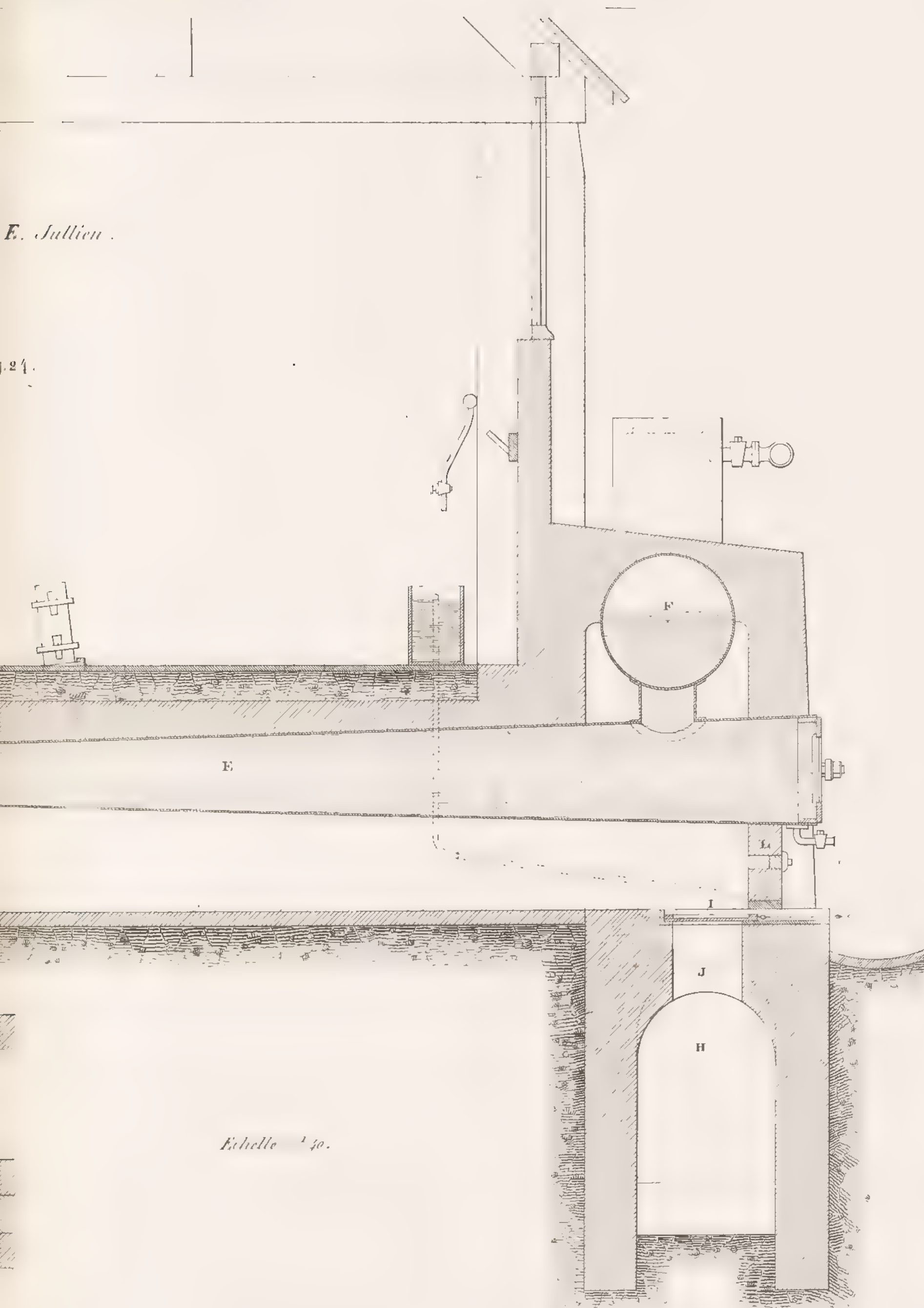
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FONDERIE D'ACIER A LA



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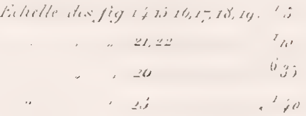
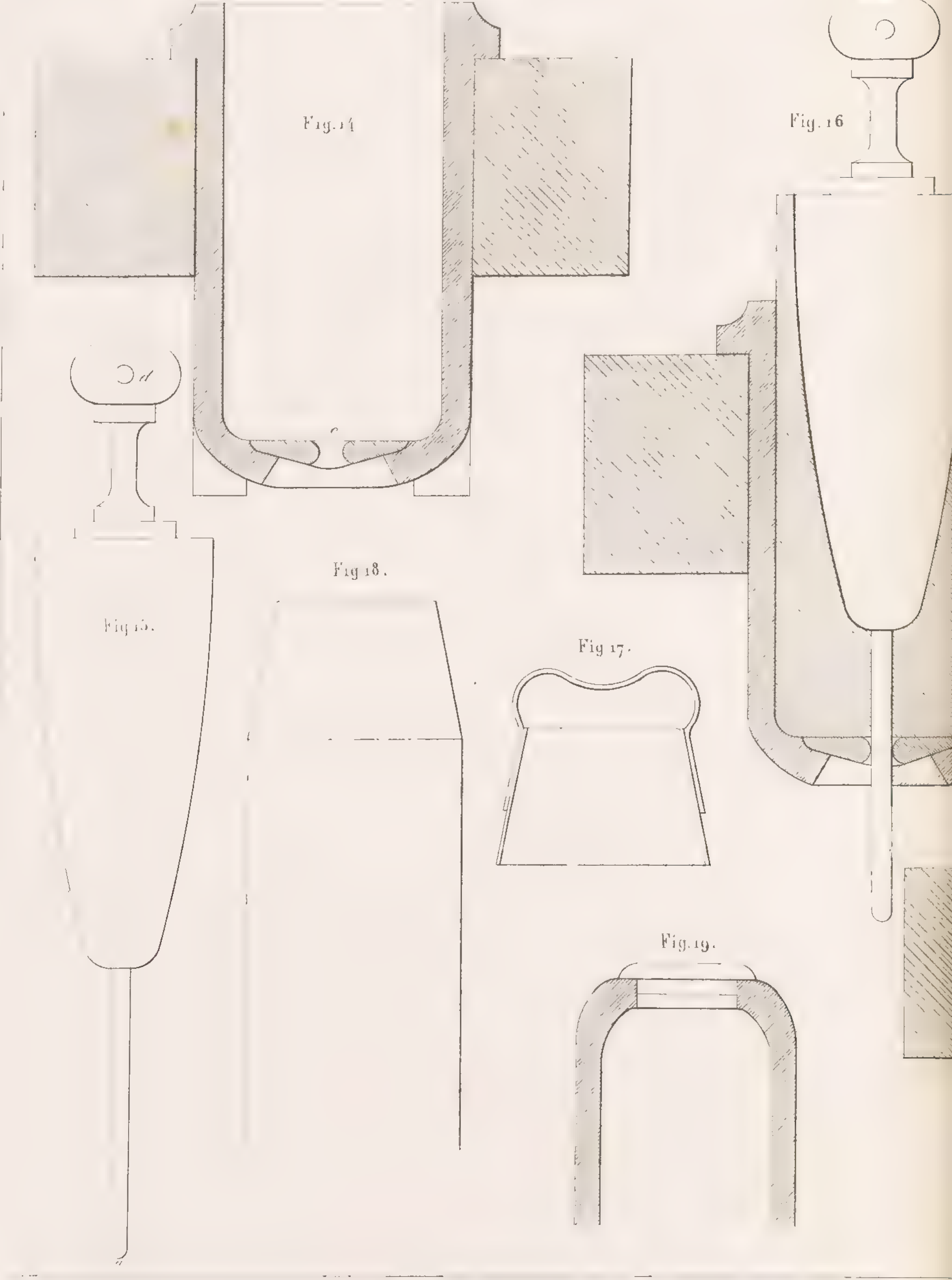
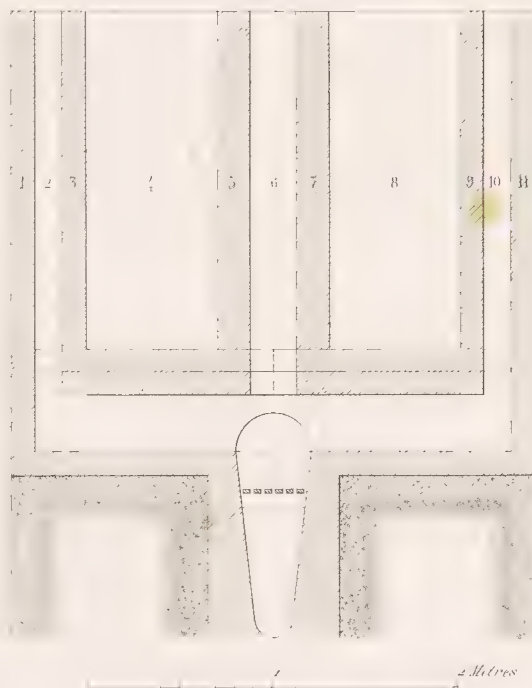


Fig. 20.
Fig. 21
210
170
Fig. 22.
200
Fig. 23.
Cheminée de 10,m 00
Largeur de la fonderie 8,00
H
h
G
J
380
A
420 sur 35
B
C
E
F
1000 sur 350 de large
Echelle des fig. 14, 15, 16, 17, 18, 19. 1/5
" " 21, 22 1/10
" " 20 6/35
" " 23 1/40


Fig. 14
Fig. 15.
Fig. 16
Fig 17.
Fig 18.
Fig. 19.
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c

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Coupe suivant AB Fig 2



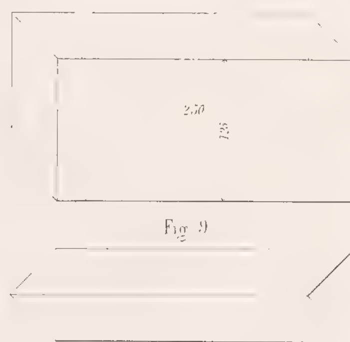
Fig 10

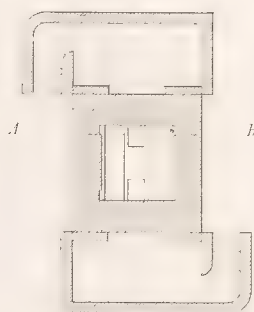


Fig 8

Fig 9

Coupe suivant YY XX Fig 5

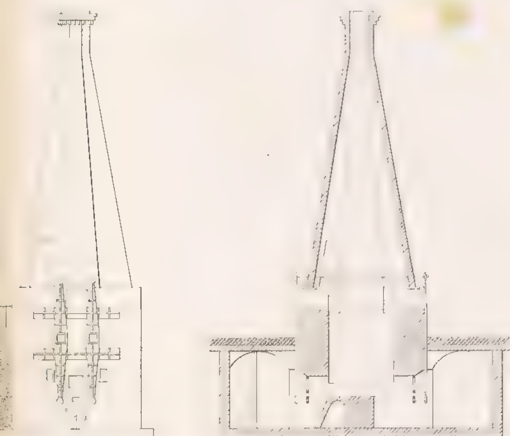




Coupe en long des plateaux Fig. 7



(Voûtes de travail supprimées.) Fig. 3. *Coupe suivant MM* Fig. 4.



Coupe suivant AB. Fig. 11.

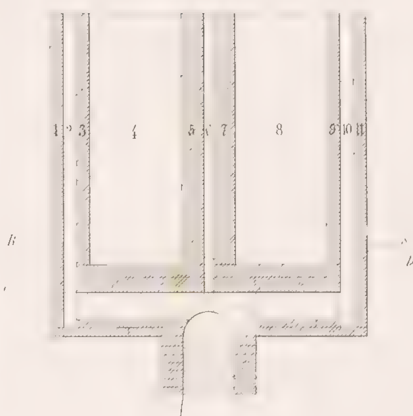
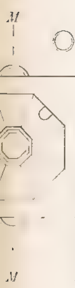
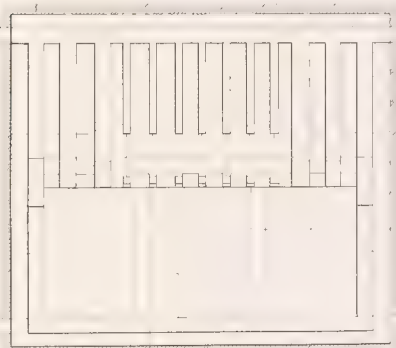


Fig. 6



Coupe suivant CD Fig. 13.



Coupe suivant RS Fig. 12



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Petit che

Systèn

Fig. 182.

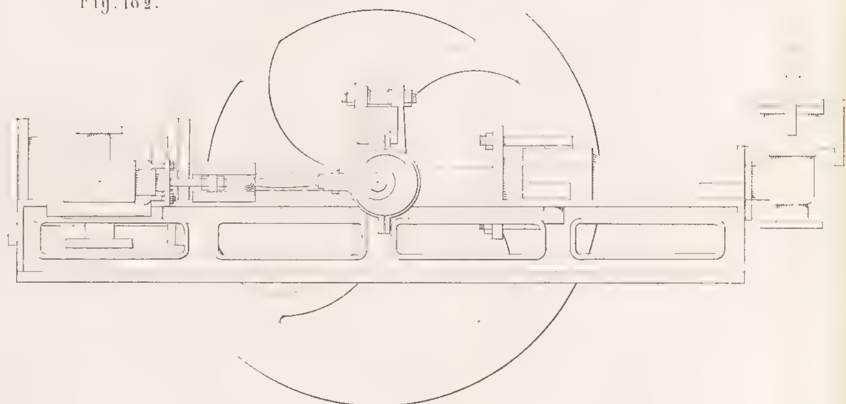
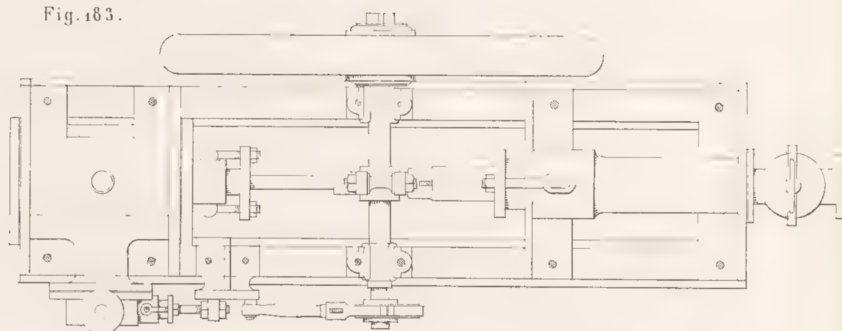
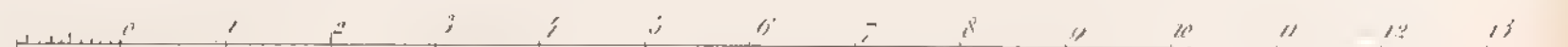


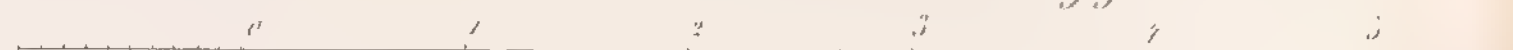
Fig. 183.



Echelle des fig. 182, 183, 184, 185.



Echelle de la fig. 186.



...al à simple effet.
...ne E. Bourdon.

Fig. 184.

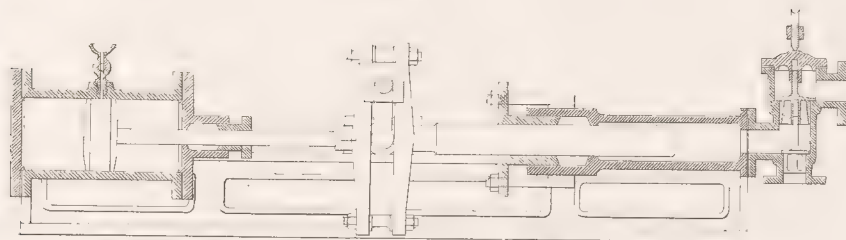
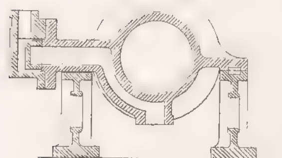


Fig. 185.



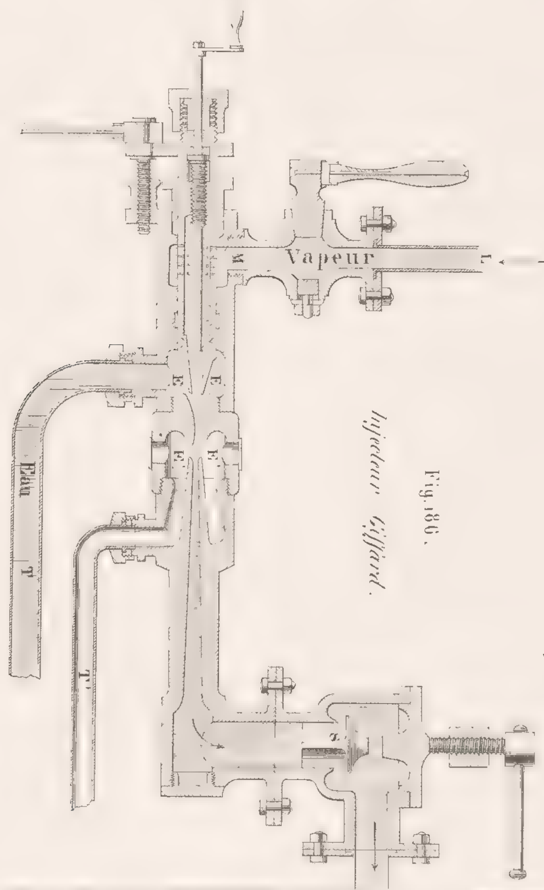


Fig. 186.
Injecteur Giffard.

4 15 16 17 18 19 20 Mètres.

6 7 8 Décim.

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Petit cheval

Système

Fig. 175. *Élévation AB.*

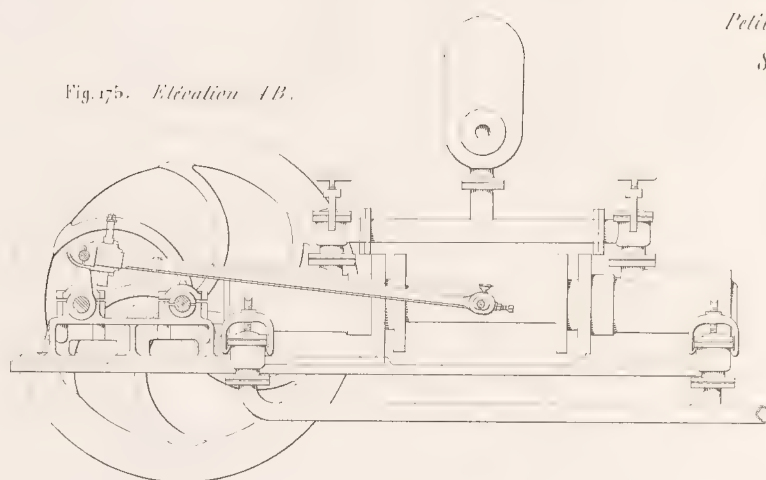


Fig. 176. *Coupe EF.*

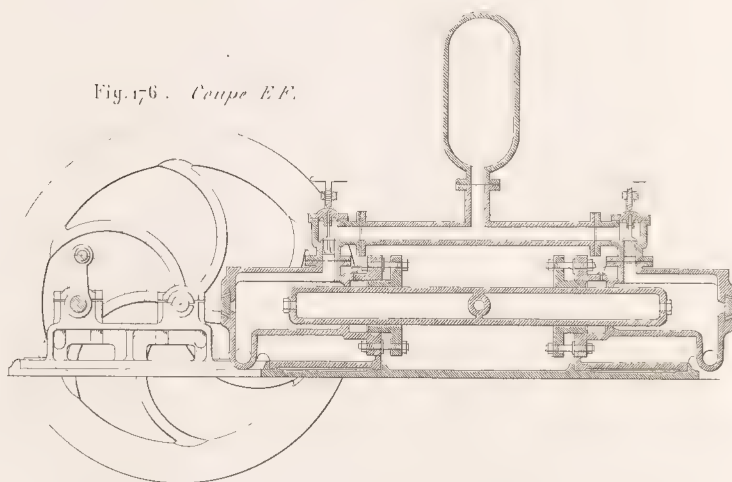
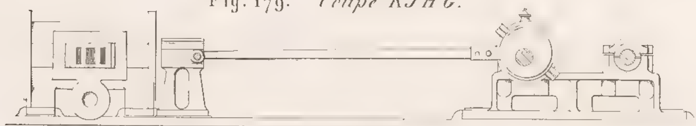


Fig. 179. *Coupe KJHG.*



à double effet.

E. Bourdon.

Fig. 177. *Coupe CD.*

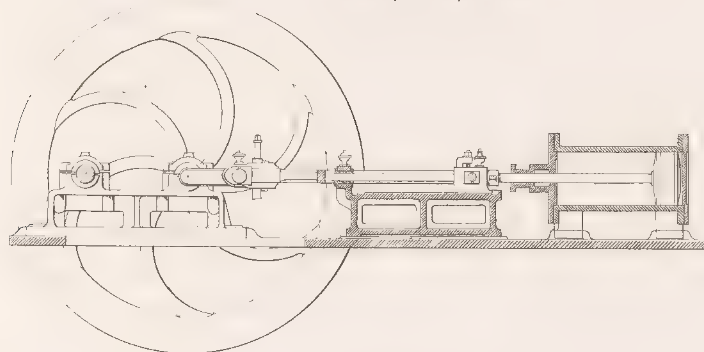


Fig. 178. *Plan*

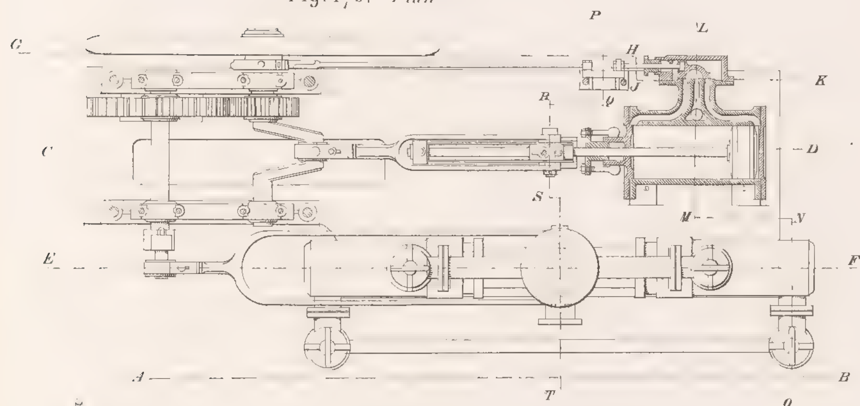


Fig. 180. *Coupe L M N O.*

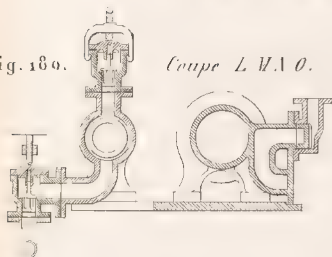
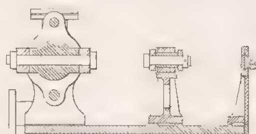
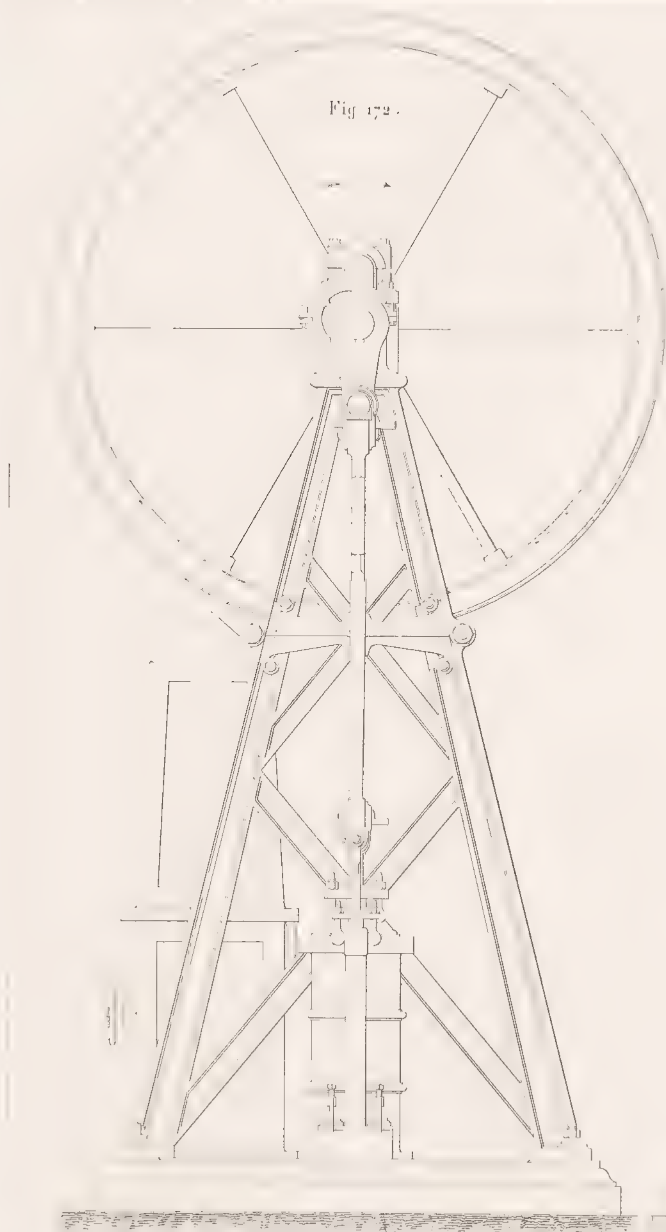


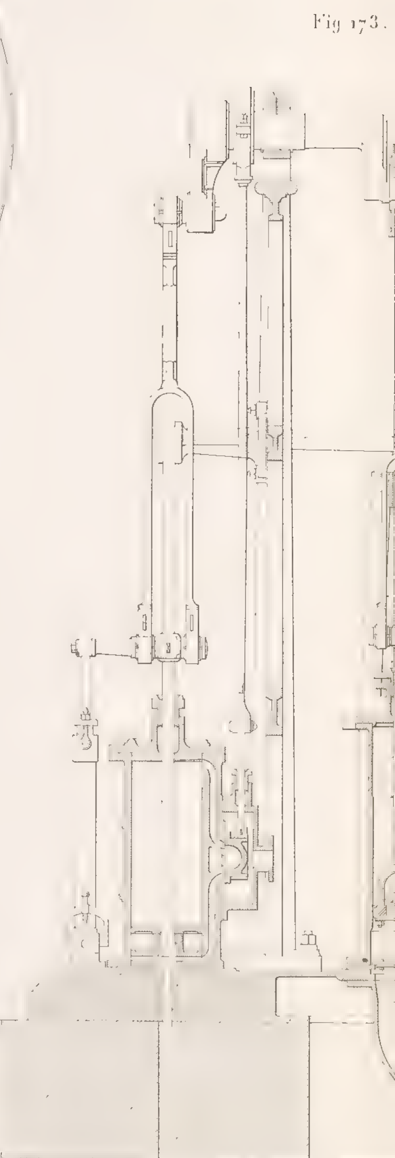
Fig. 181. *Coupe P Q R S T.*



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Ech. 0.025 pour mètre



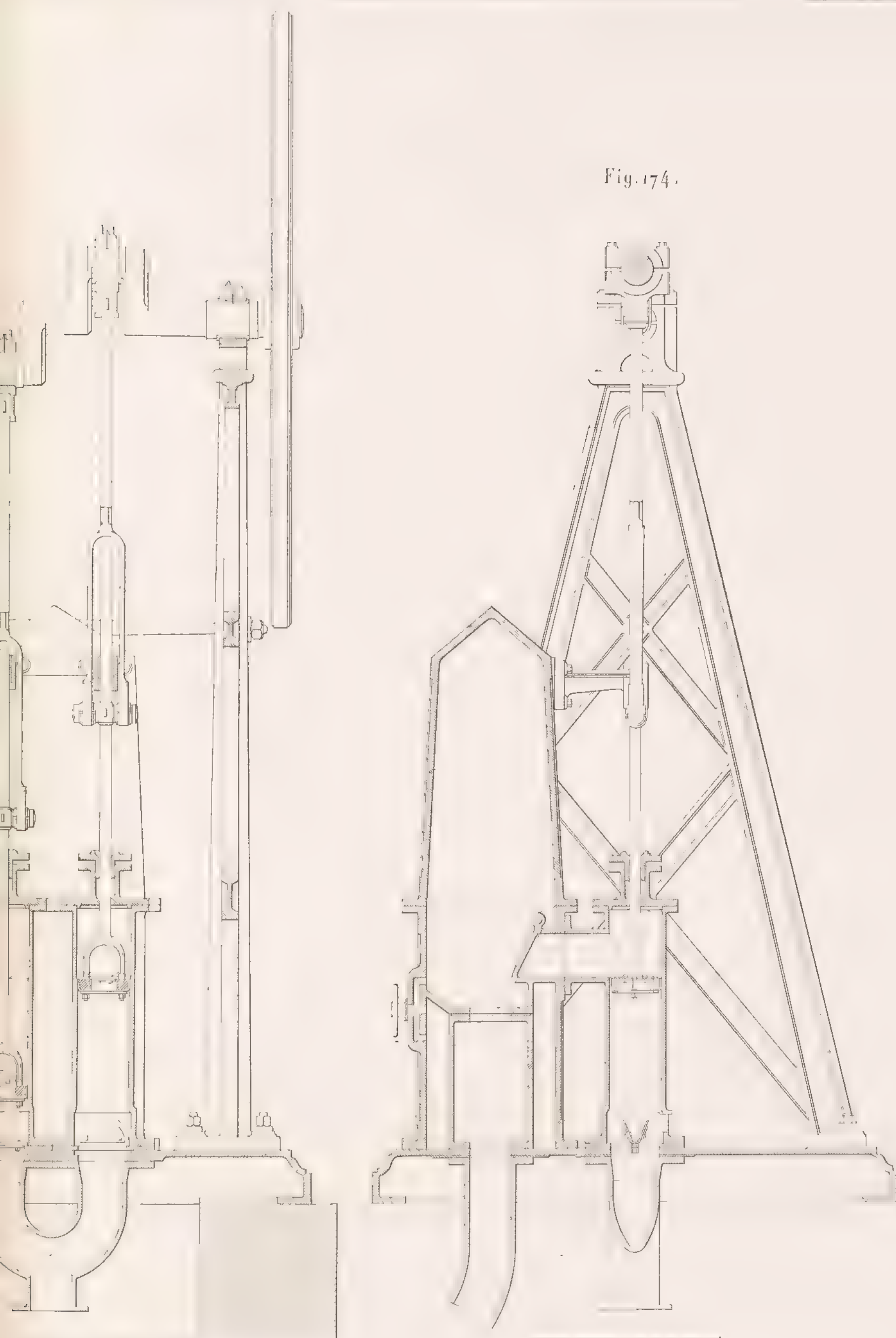
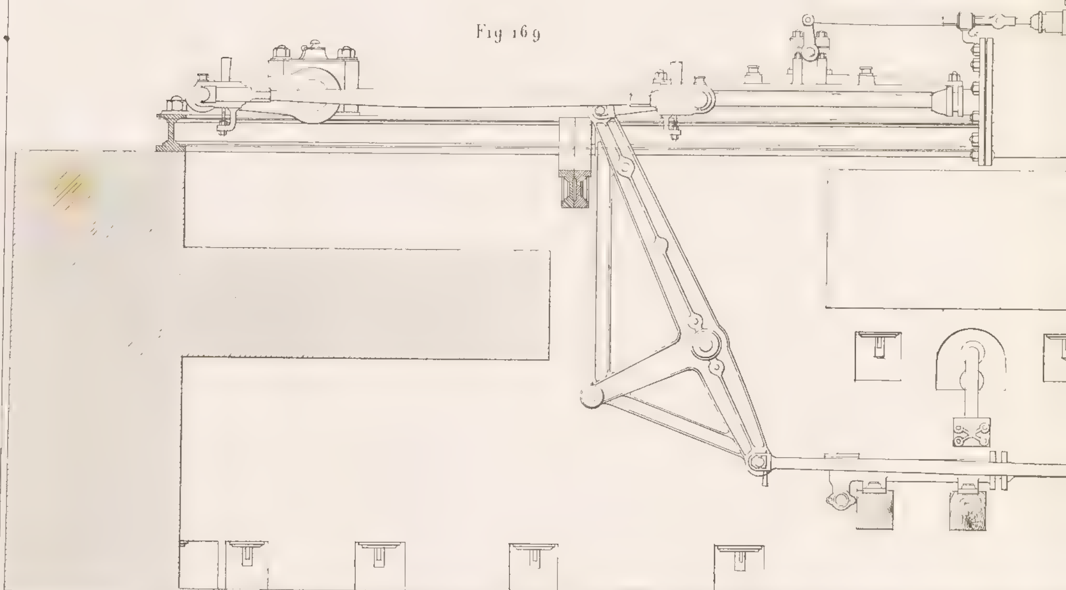


Fig. 174.

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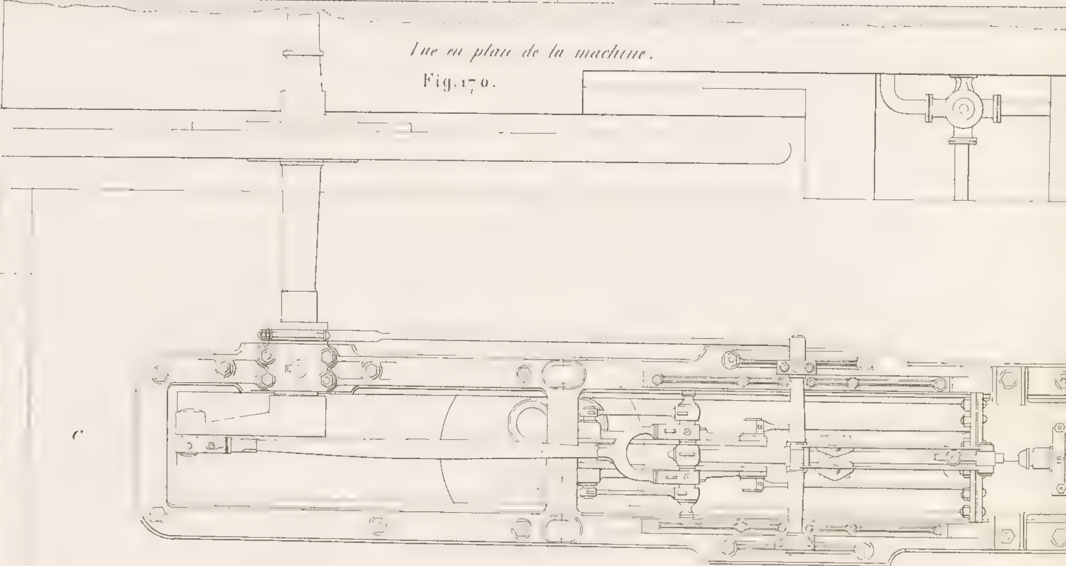
Coupe longitudinale suivant CD.

Fig 169



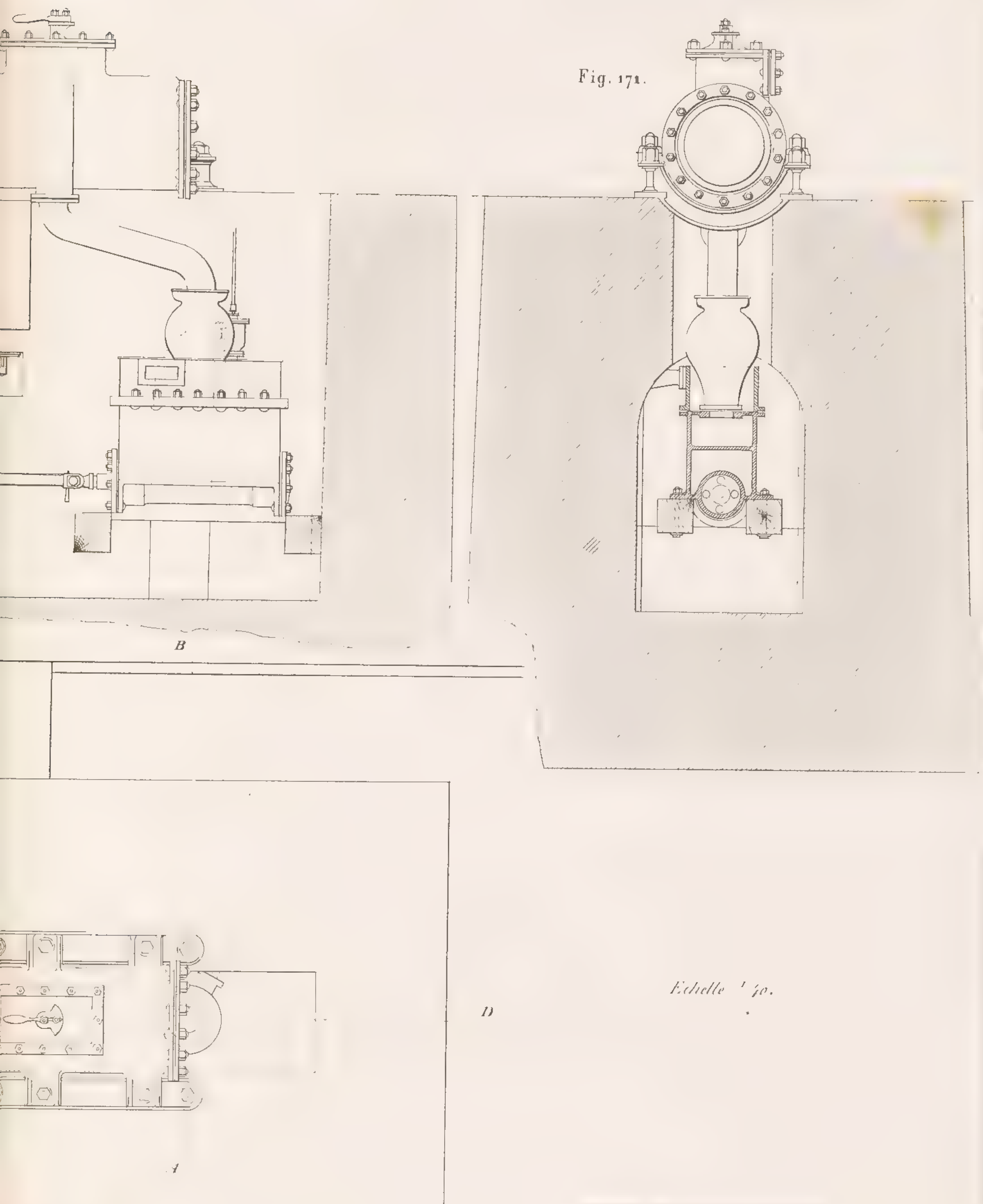
Vue en plan de la machine.

Fig. 170.



Coupe verticale et transversale suivant A B.

Fig. 171.



Echelle 1/40.

Editeur.

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Fig 165

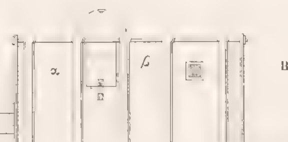
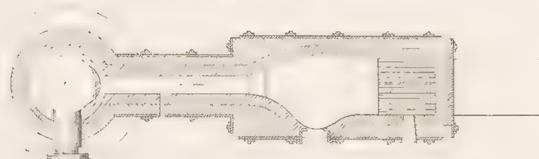


Fig 166



Echelle de 0,01 par Mètre

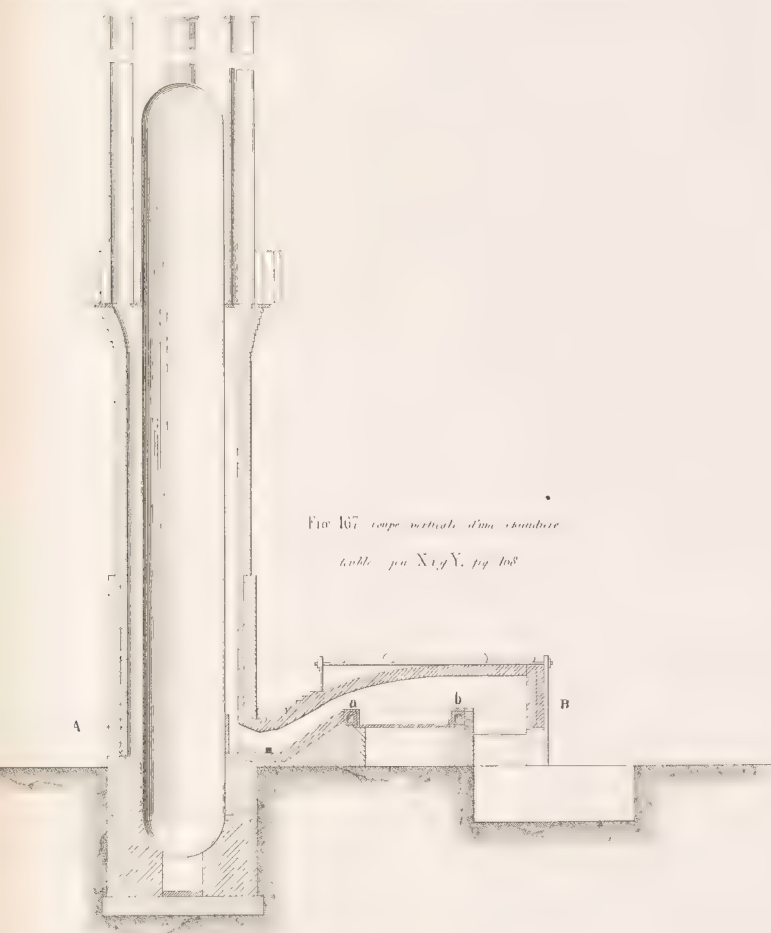


Fig. 167 coupe verticale d'une chaudière faite par X et Y. fig 168

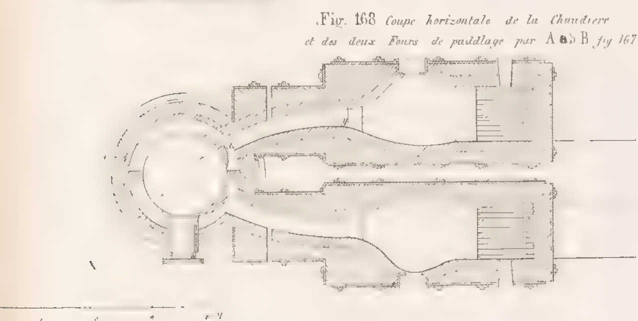


Fig. 168 Coupe horizontale de la Chaudière et des deux Fours de puddlage par A et B fig 167

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Fig. 161.

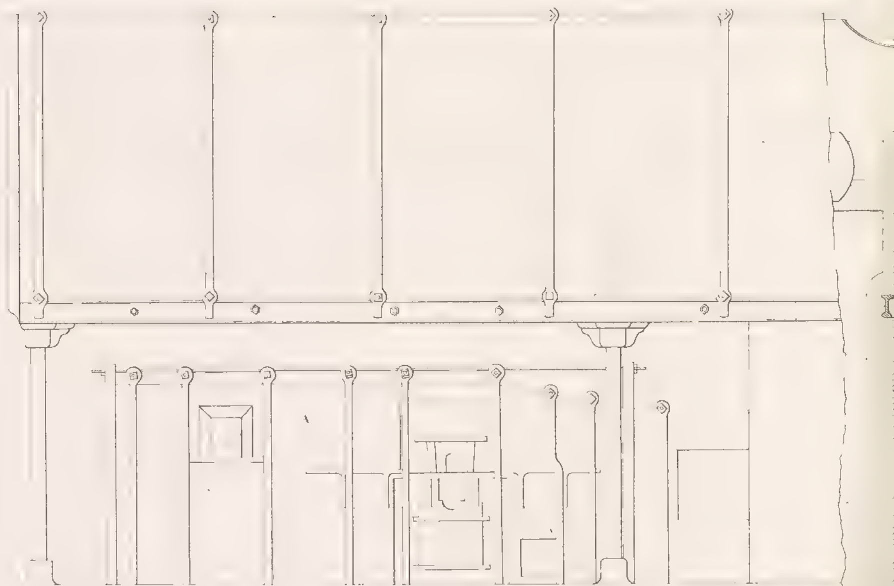
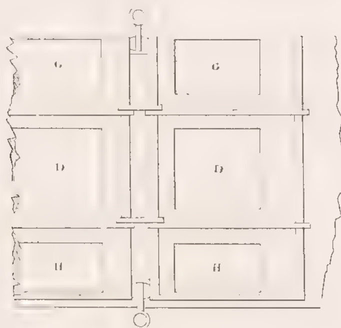


Fig. 164.

Nouvelle disposition des canaux.



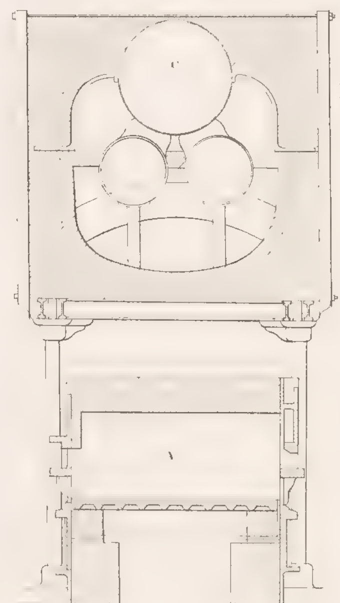


Fig. 162.

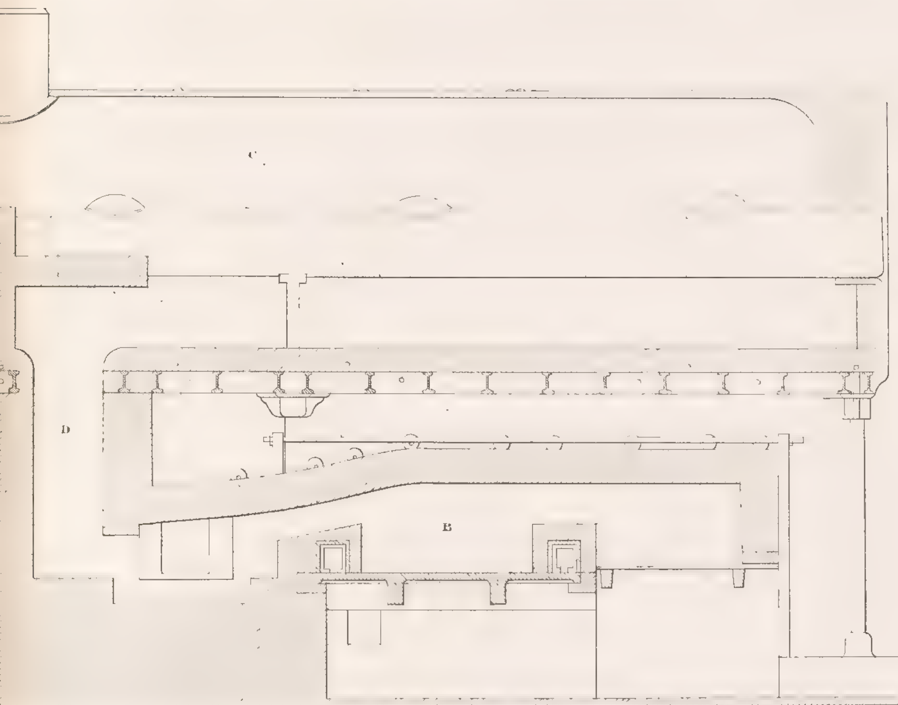
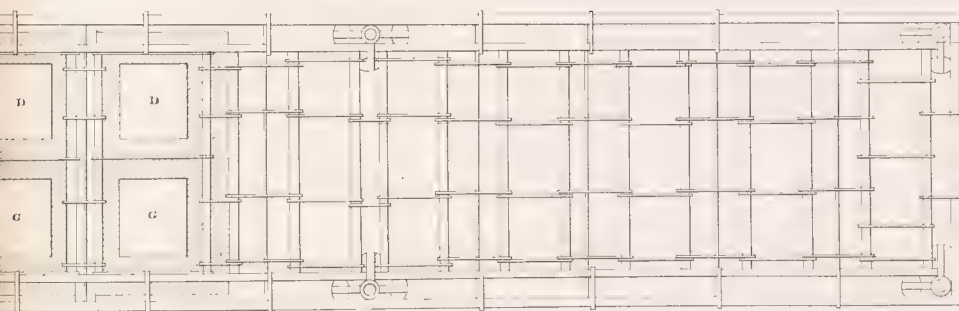


Fig. 163.



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Fig. 151.



Fig. 152.

Fig. 153.

Fig. 154.

Fig. 155.



Fig. 156.

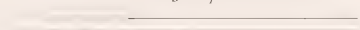


Fig. 157.

Fig. 158.



Fig. 159.





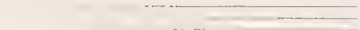


Fig. 160.

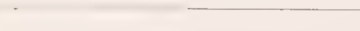




Fig. 149.

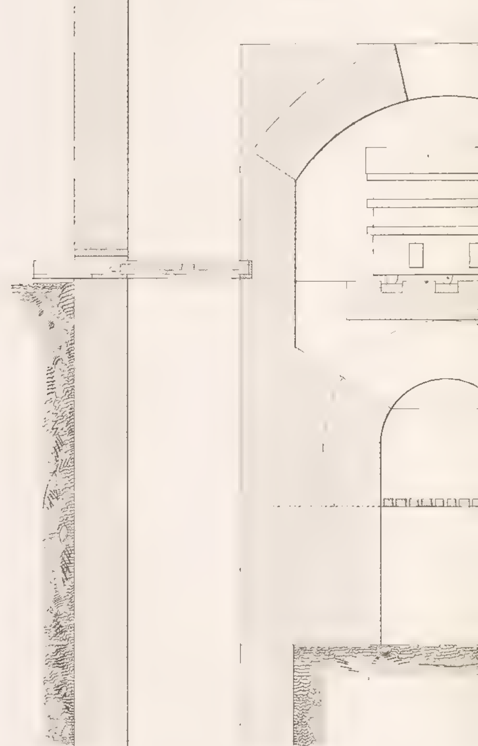
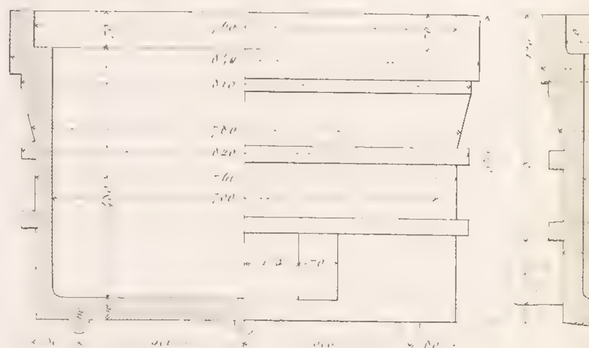
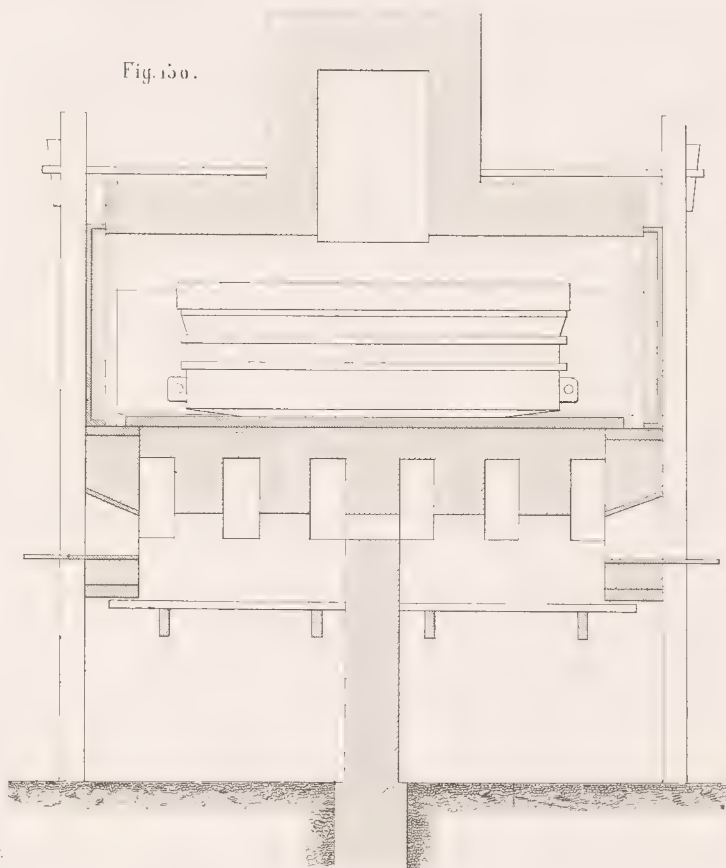


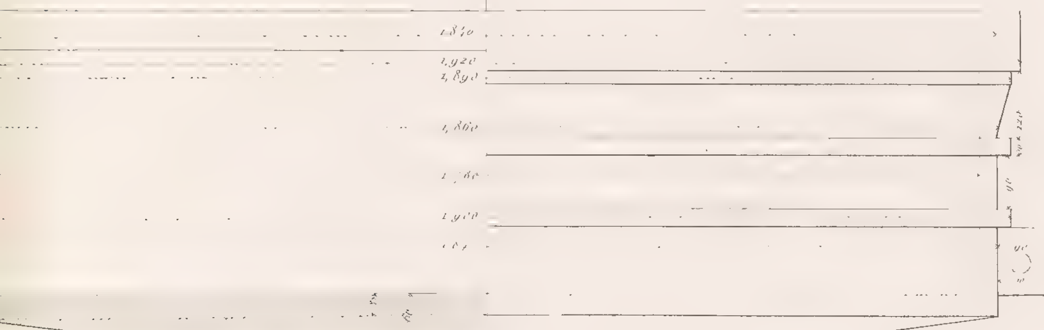
Fig. 147.





Echelle des fig. 147, 148 1/10.
" " " 149, 150 1/25.

Fig. 148.



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Fig. 139.

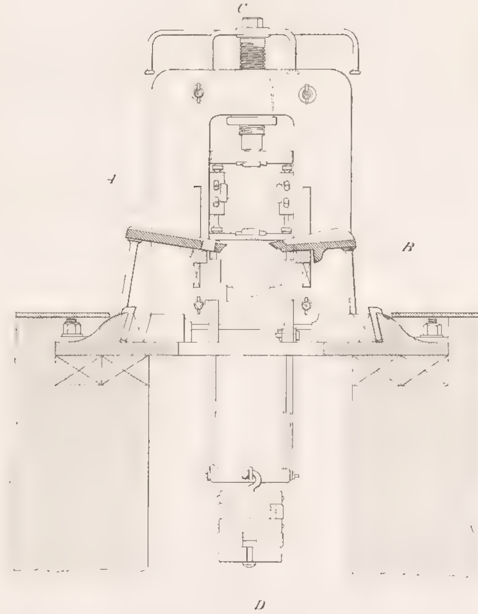


Fig. 140.

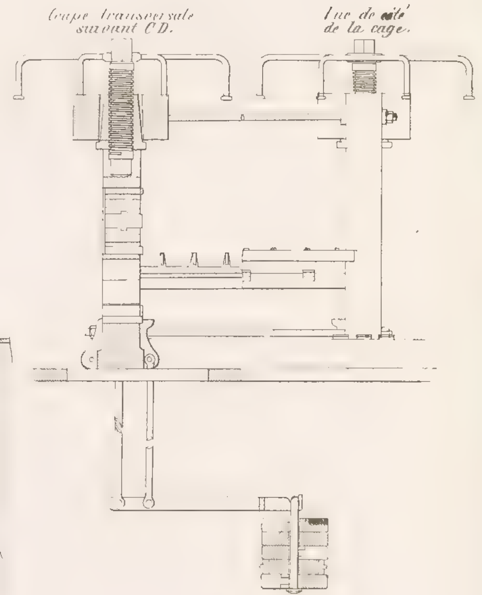


Fig. 141.
Plan dessus

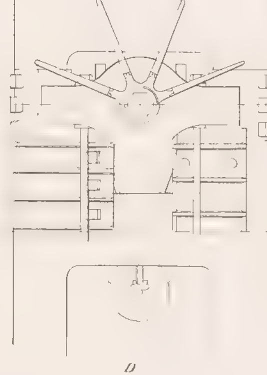
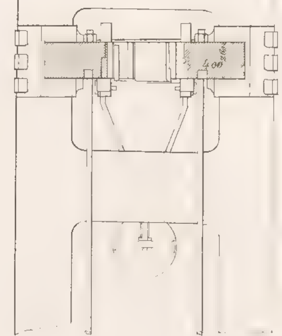


Fig. 142.
Coupe en plan suivant A B.



Echelle 1/40

Fig. 144.

Coupe suivant AB et le chapeau suivant GH.

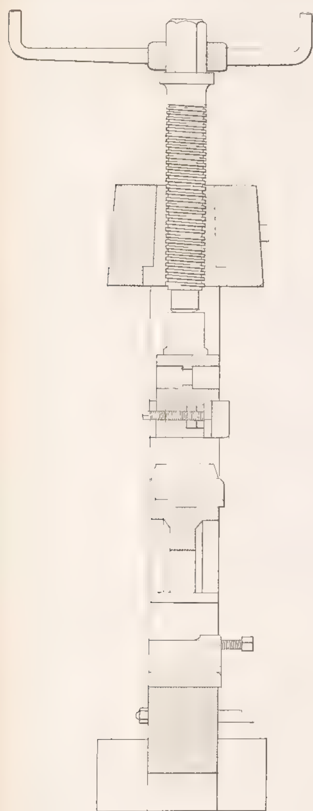
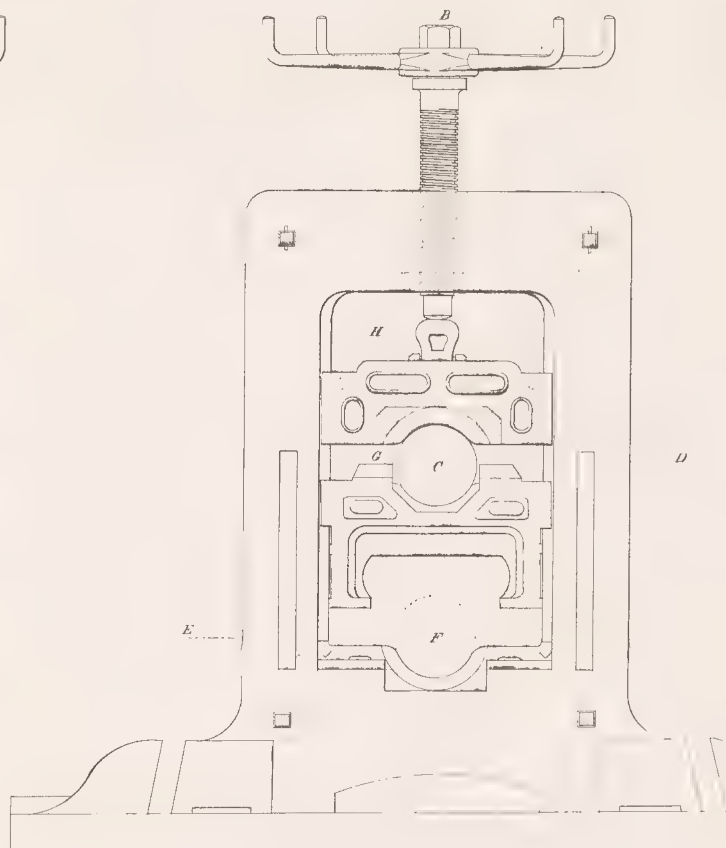


Fig. 143.



Plans en coupe suivant CD et EF

Fig. 146.

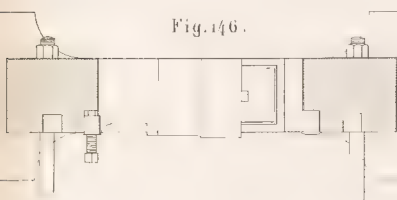
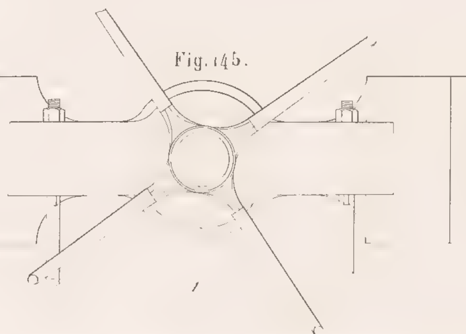


Fig. 145.



Echelle 1/5

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Fig. 128.

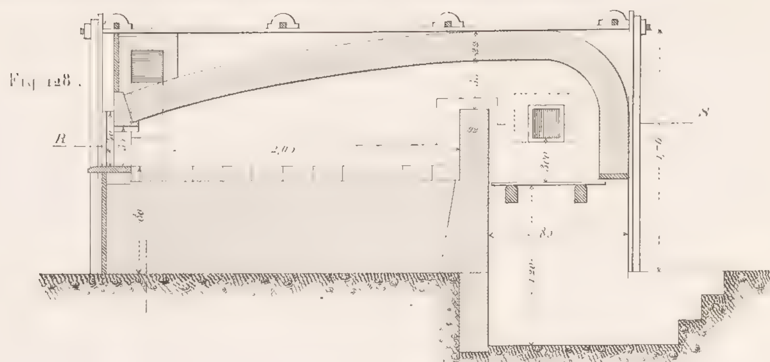
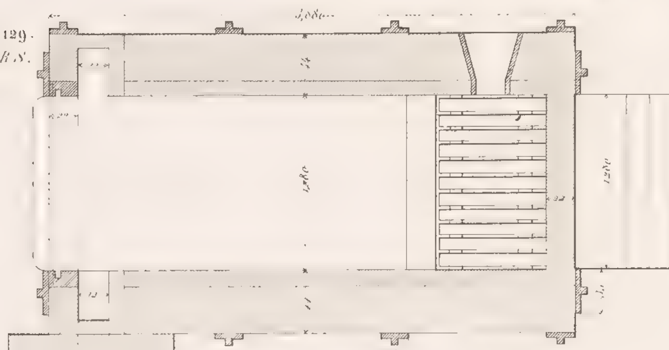


Fig. 129.
Coupe R.S.



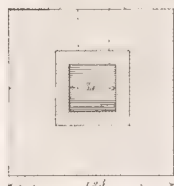
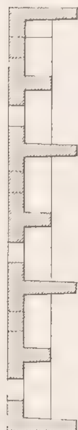
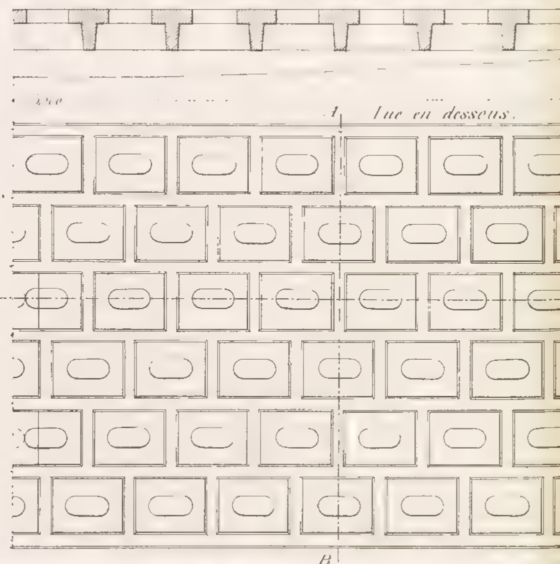


Fig. 136. *Coupe longitudinale suivant AB'*

Fig. 137.
Vue en dessous.

Fig. 138.
Coupe transversale suivant AB.





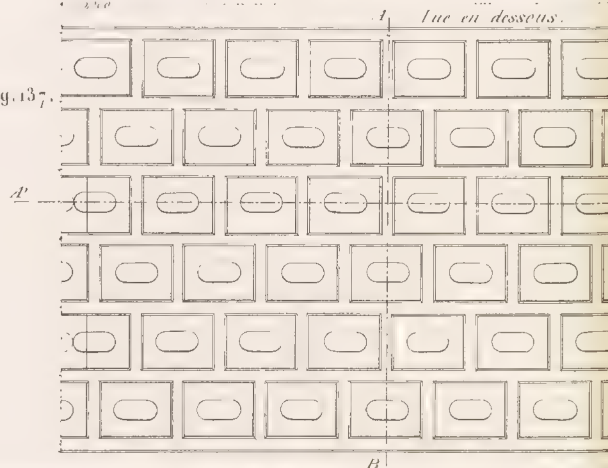
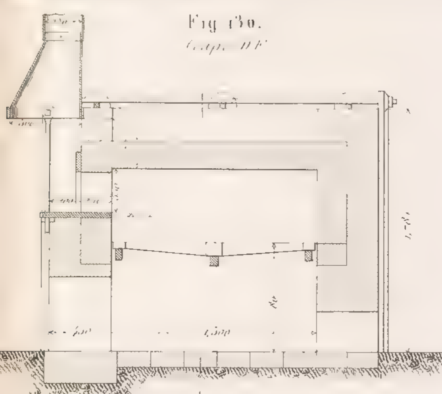
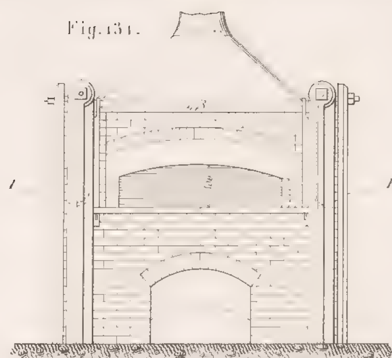
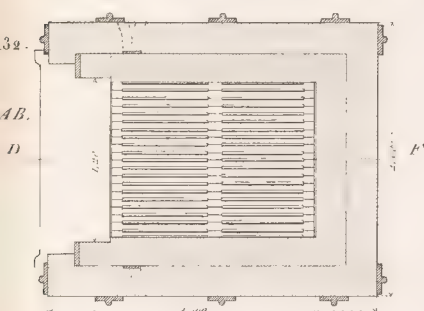


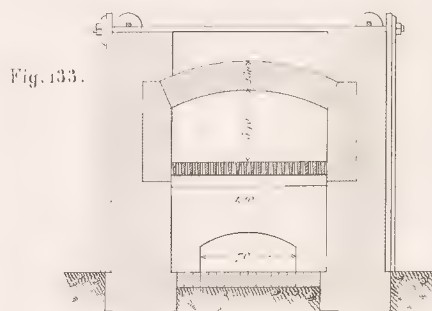
Fig.

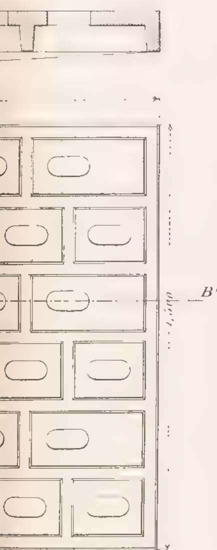
Coupe

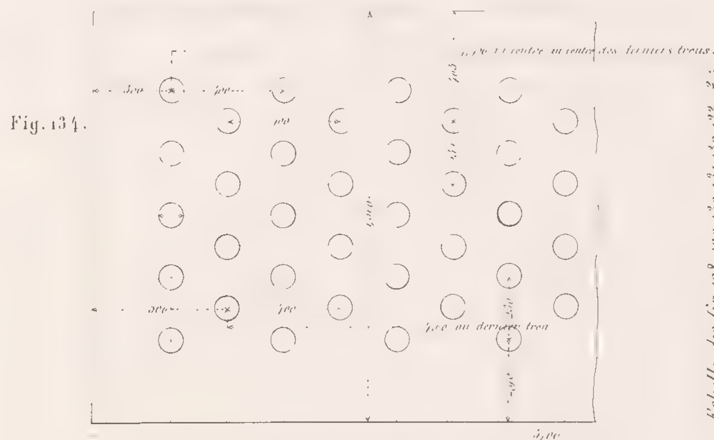

Fig. 130.

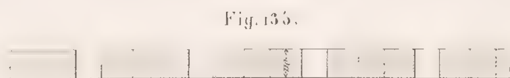

Fig. 131.




Fig. 133.

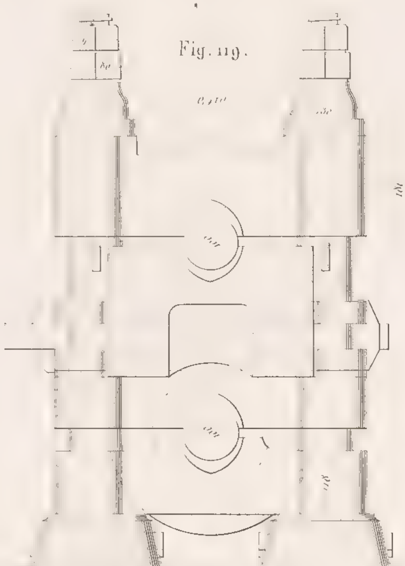


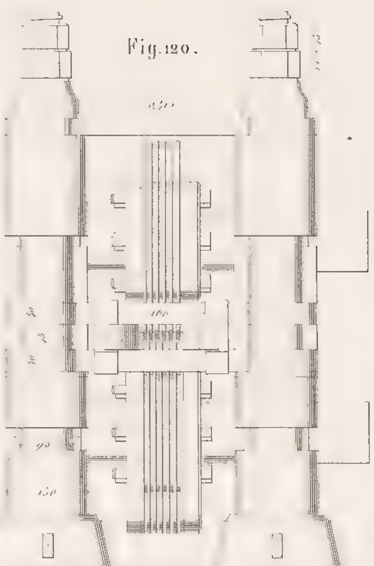

Fig. 134.

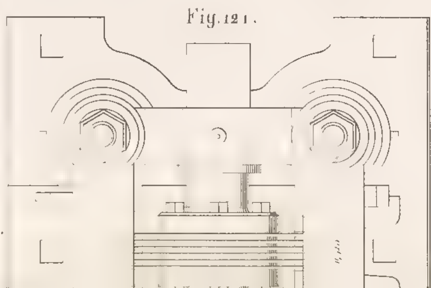

Fig. 135.

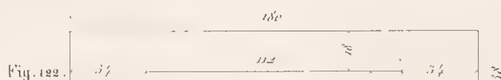
Echelle des fig. 128, 129, 130, 131, 132, 133. 2/3.
" " 134, 135, 136, 137, 138. 1/5.

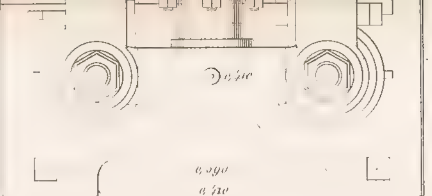
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Fig. 119.


Fig. 120.


Fig. 121.


Fig. 122.



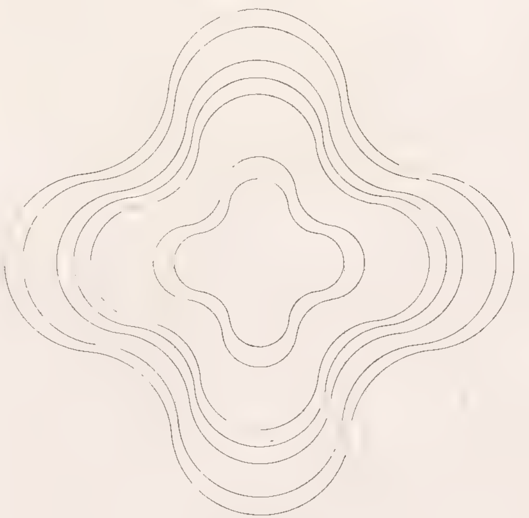


Fig. 127.

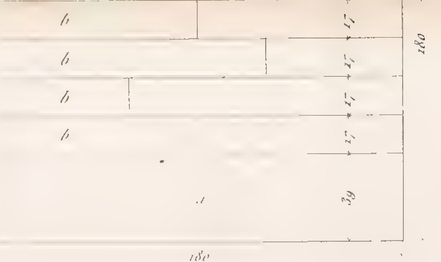


Fig. 123.

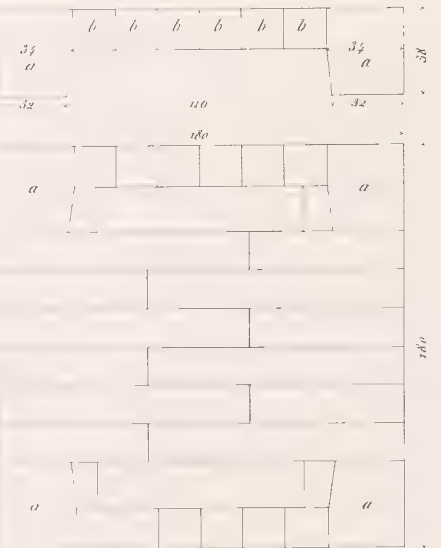


Fig. 124.

Fig. 125.

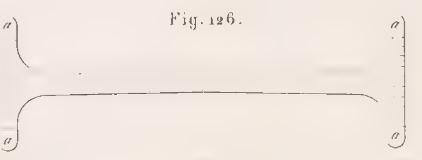
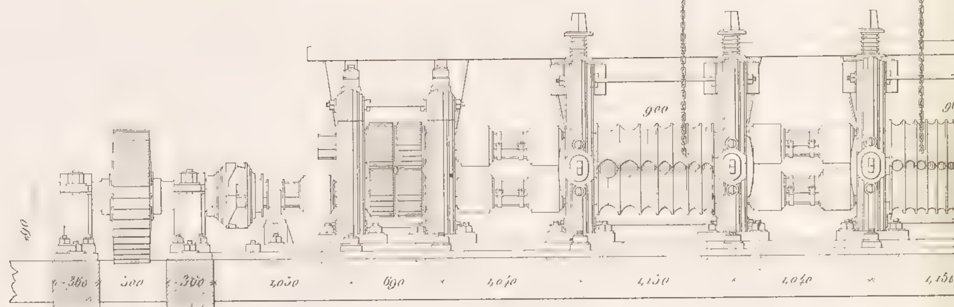


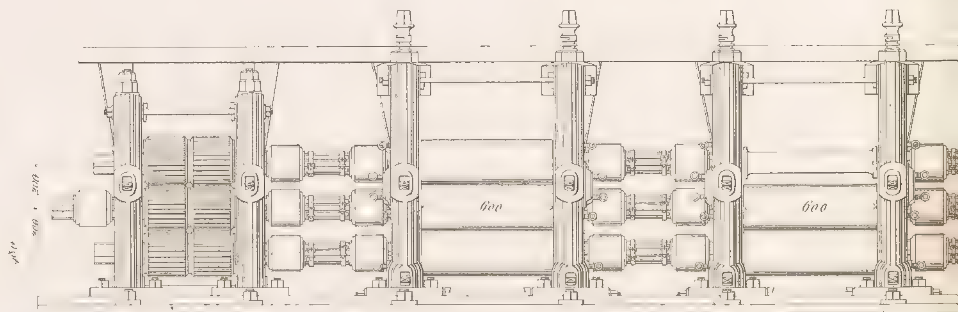
Fig. 126.

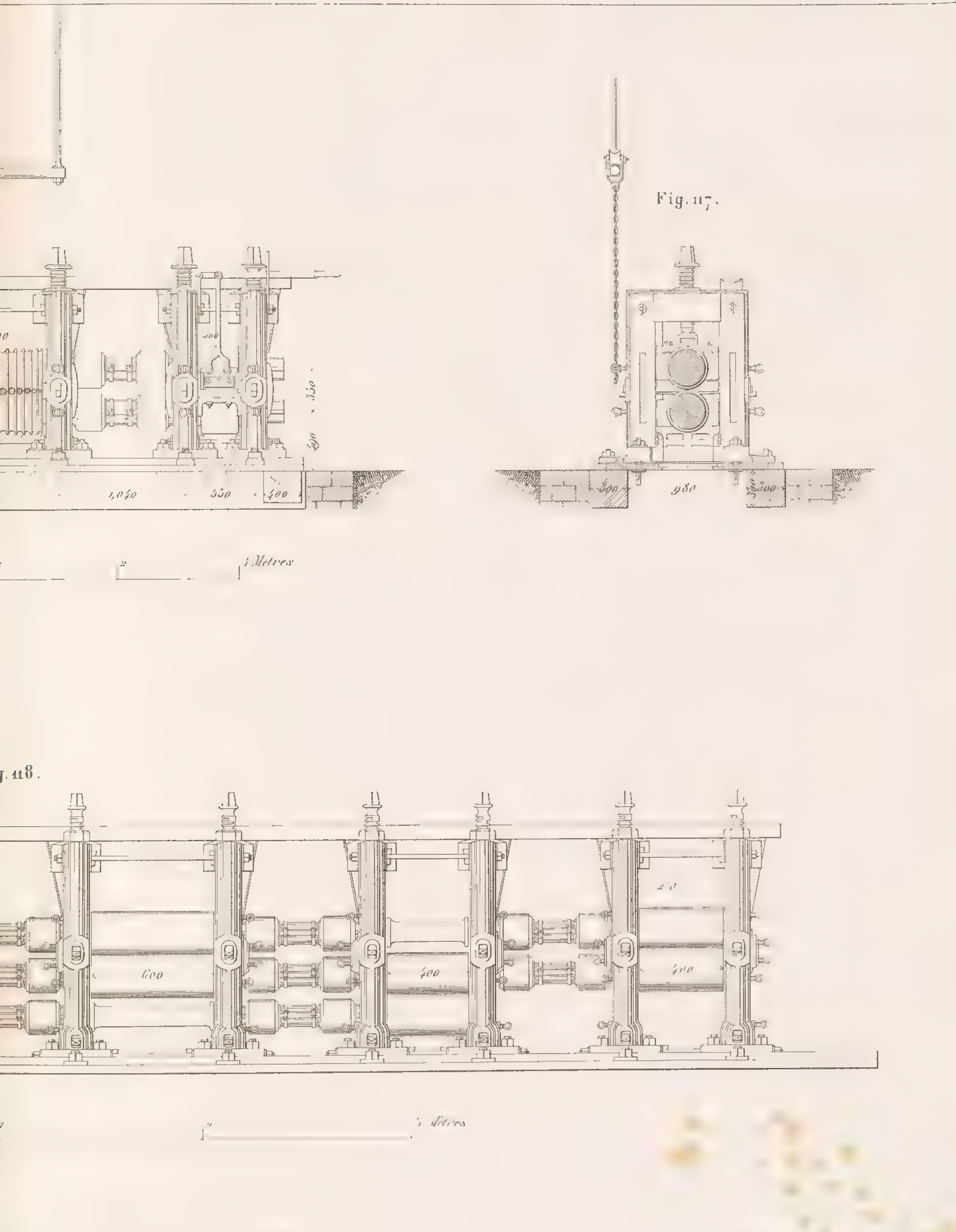
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Fig. 116.



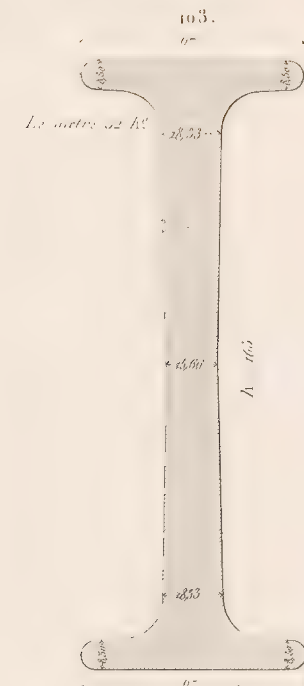
Fig

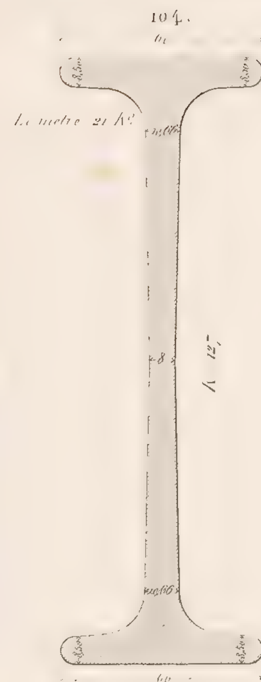


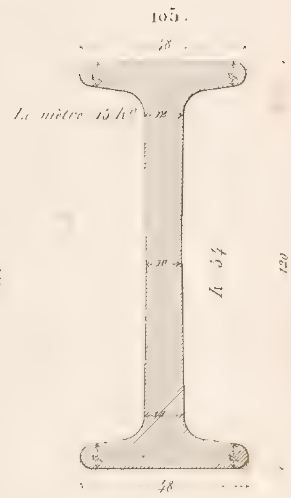

Fig. 117.
1,040
550
400
350
980
300
3 Metres
Fig. 118.
600
400
400
3 Mètres

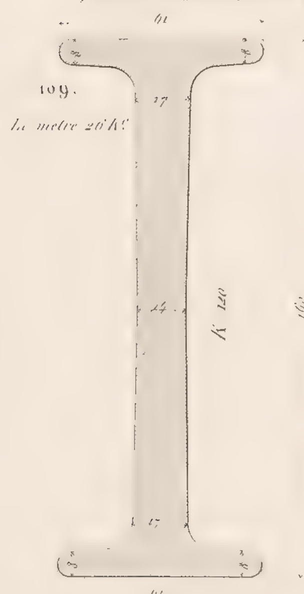
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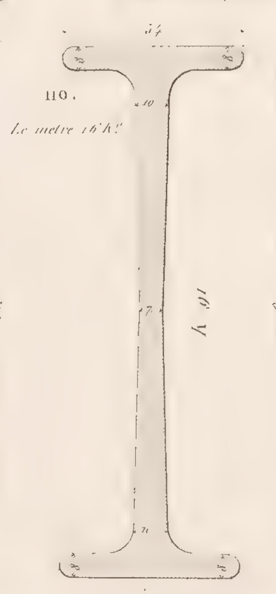
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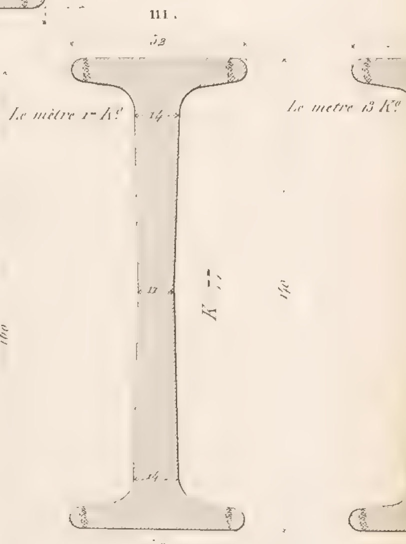






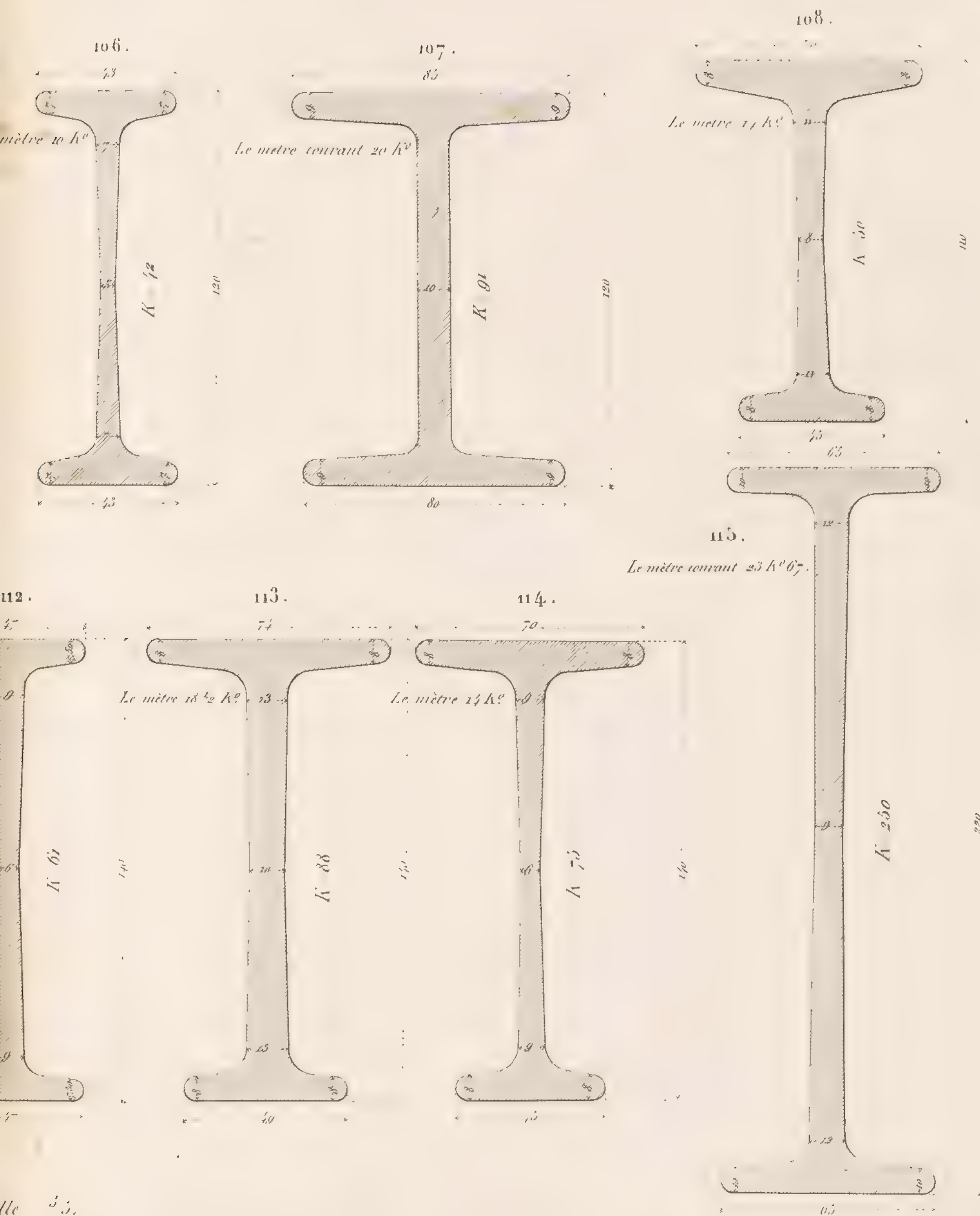






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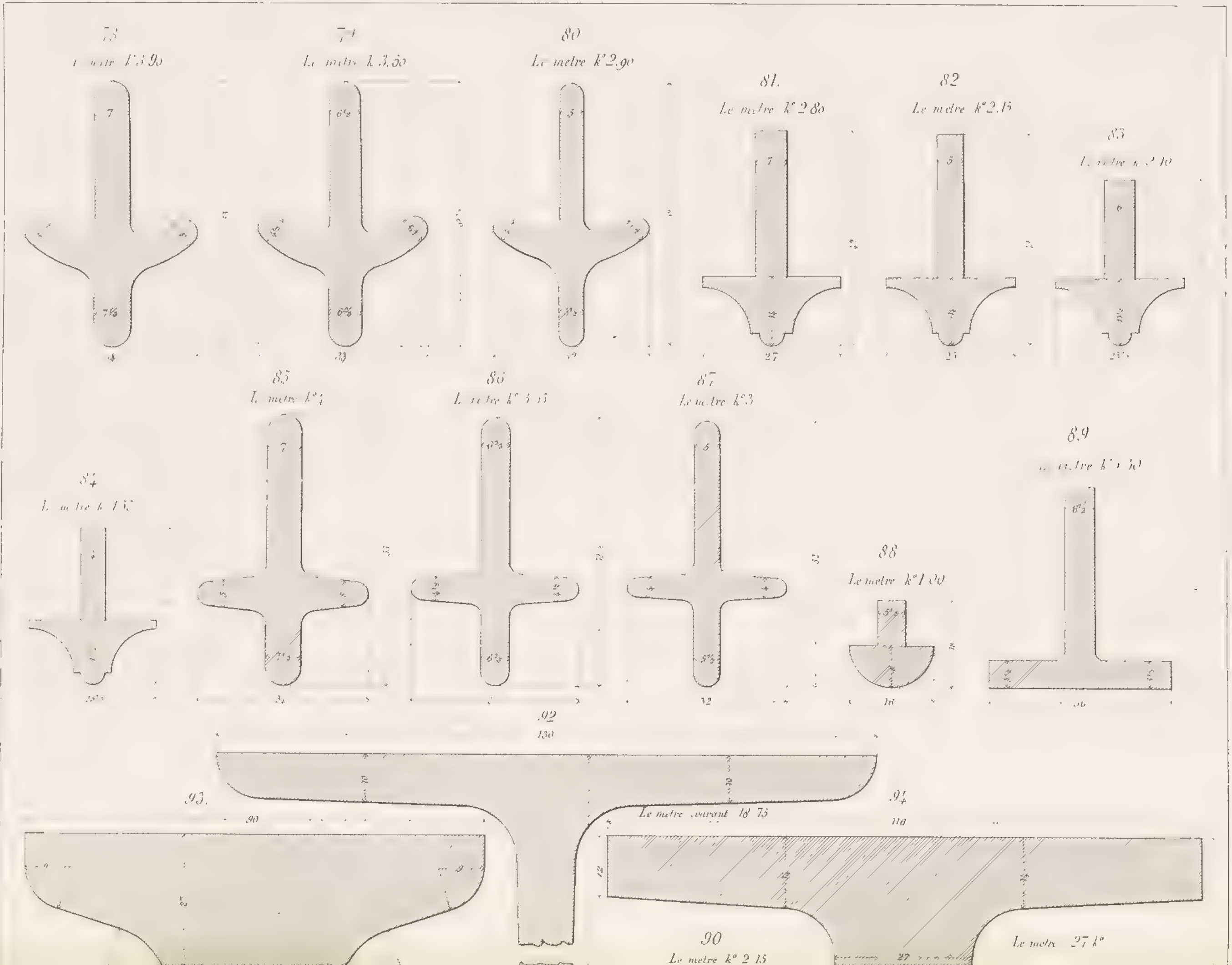
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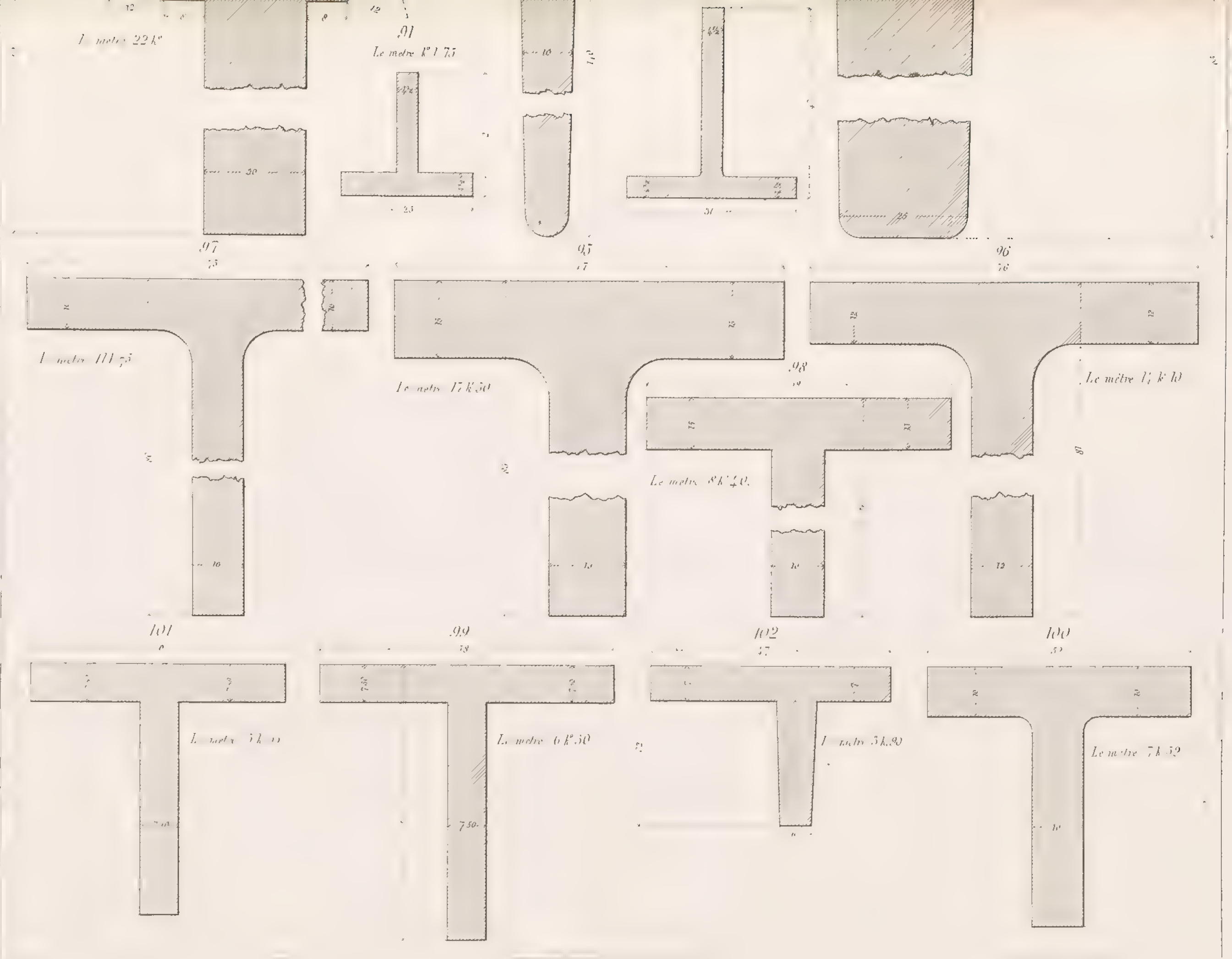
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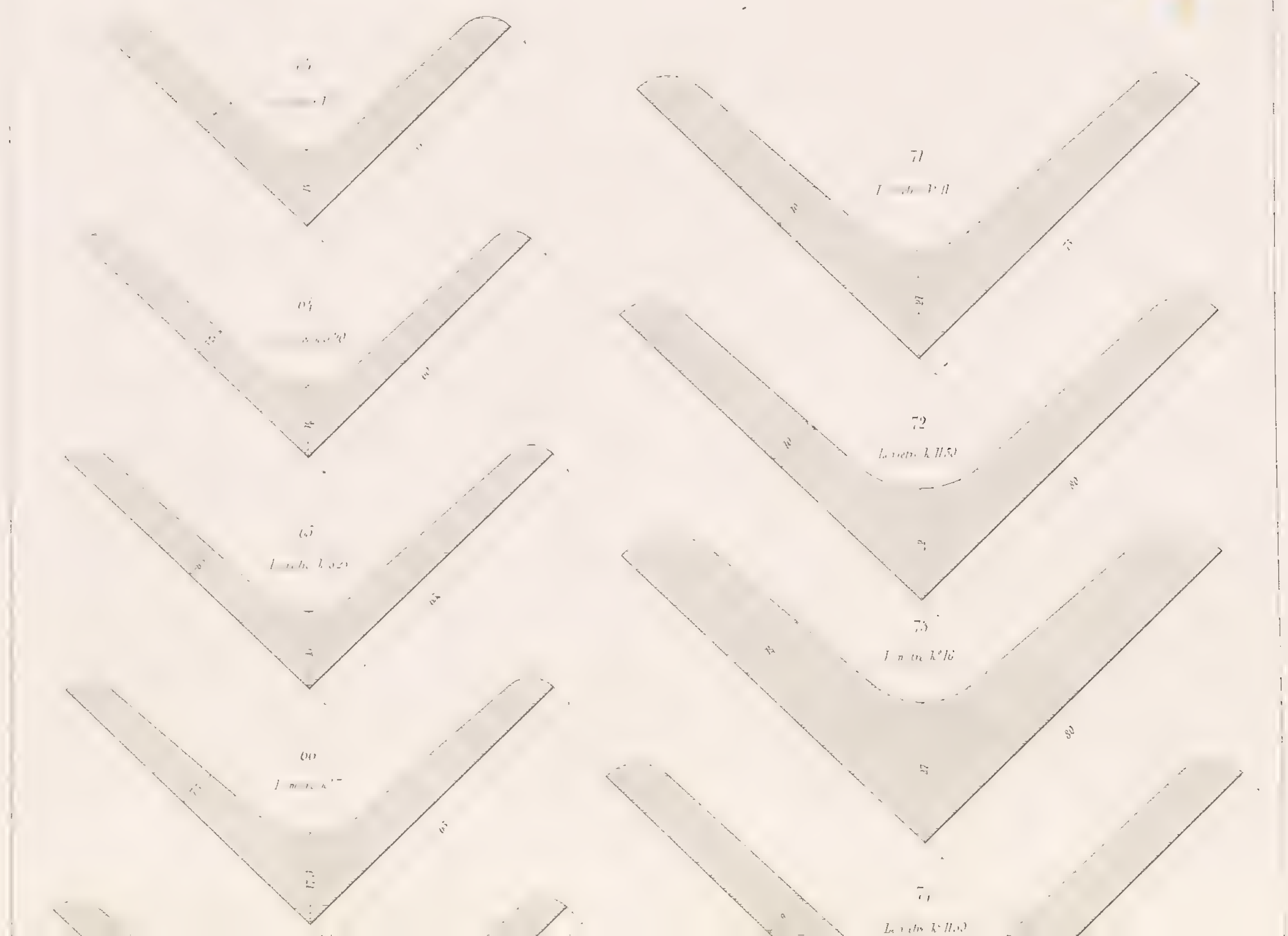
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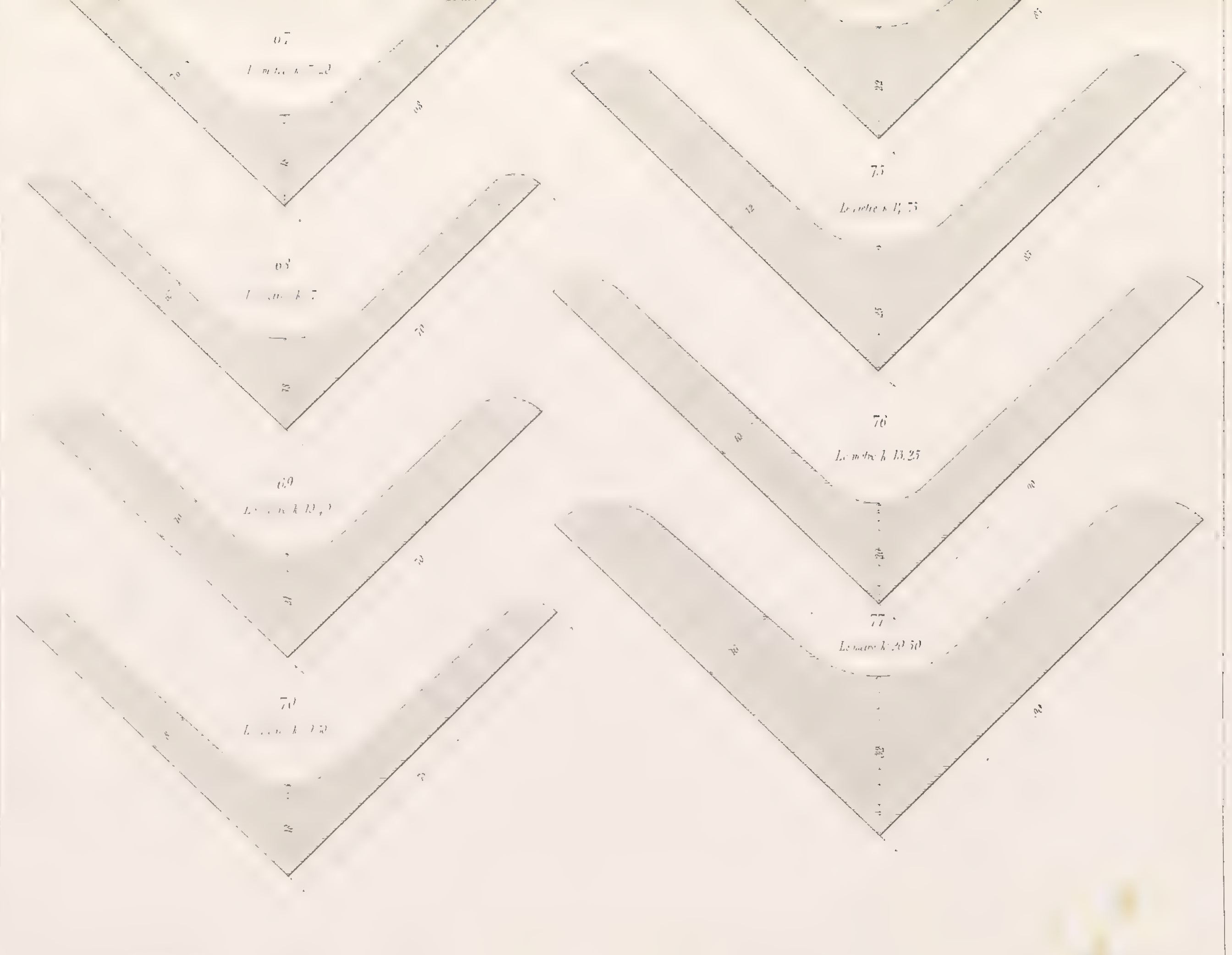
79
Le metre k. 3.50
80
Le metre k° 2.90
81.
Le metre k° 2.80
82
Le metre k° 2.15
85
86
87
Le metre k° 3
88
Le metre k° 1.30
89
92
130
93.
90
94
116
Le metre courant 18.75
90
Le metre k° 2.15


91
97
95
96
98
Le mètre 17 k 50
Le mètre 14 k 10
Le mètre 8 k 40
101
99
102
100
Le mètre 6 k 50
Le mètre 5 k 90
Le mètre 7 k 52

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71
72
80



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Fig. 46

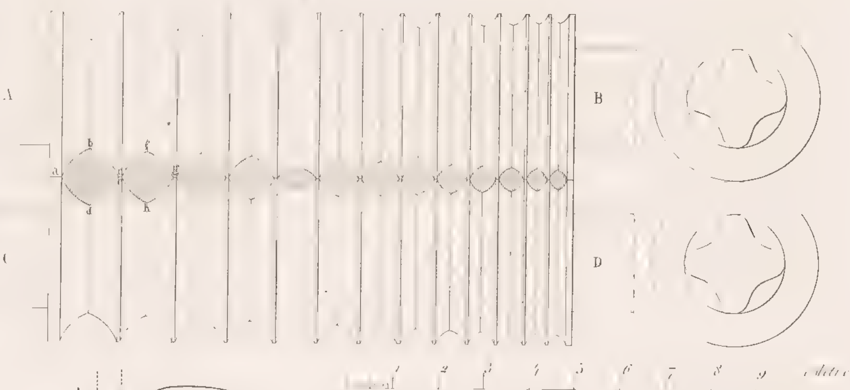


Fig. 47

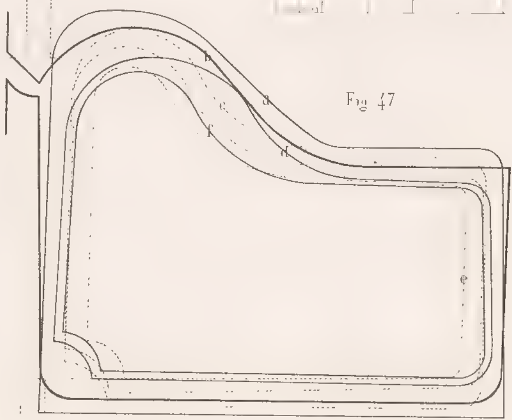


Fig. 48

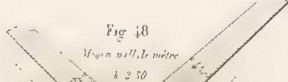


Fig. 54

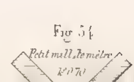
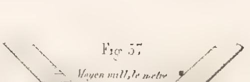
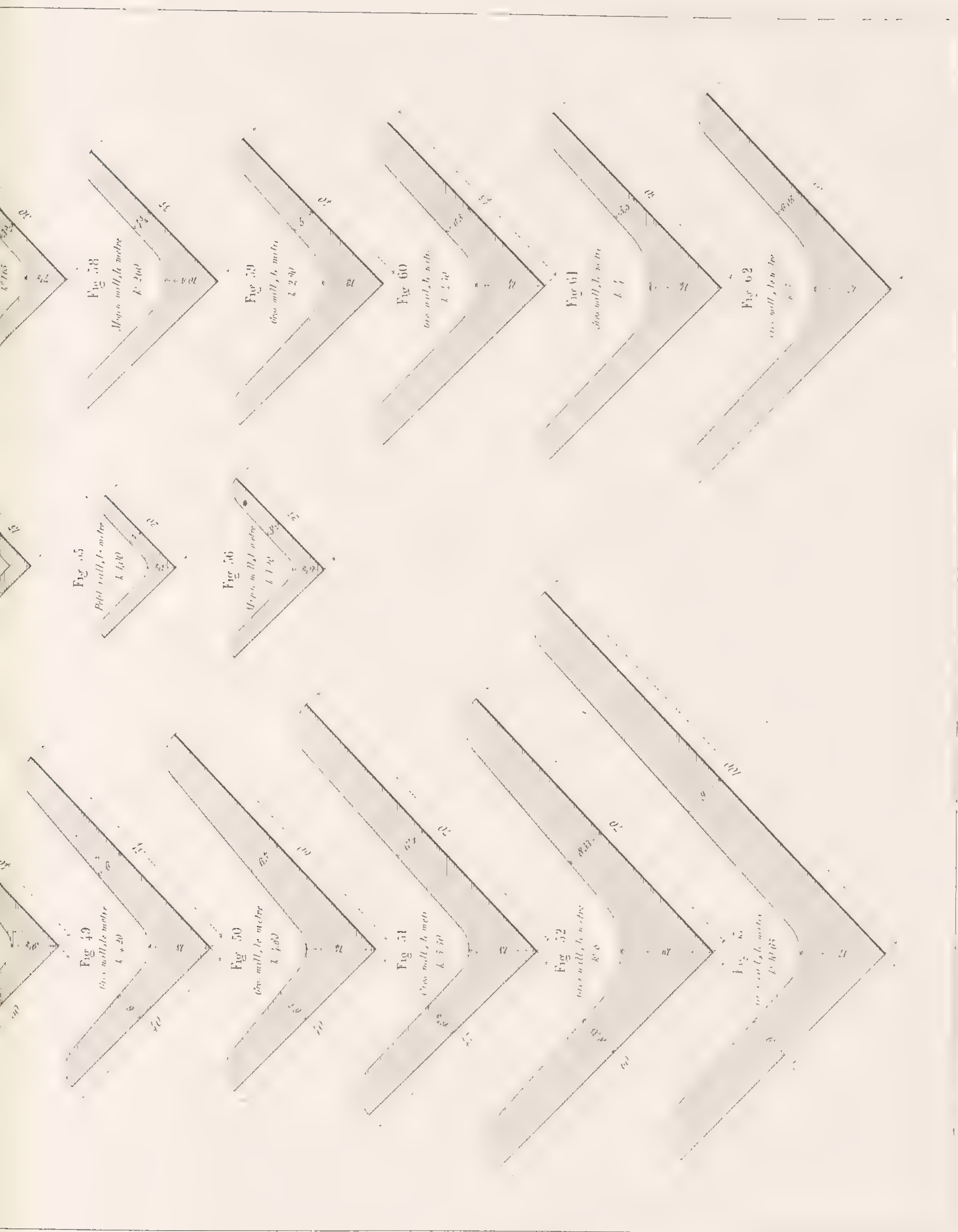


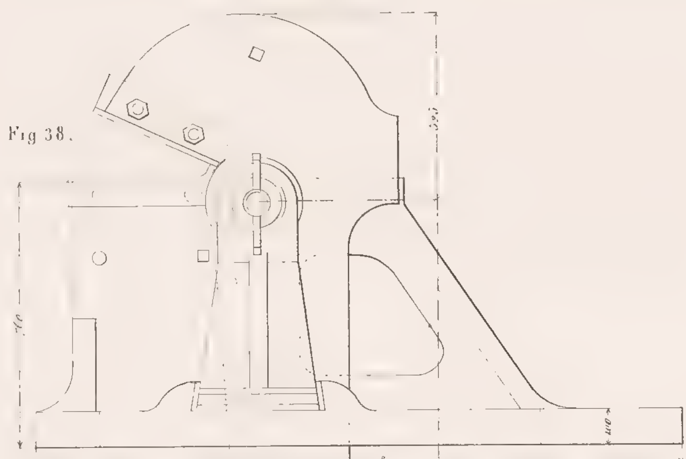
Fig. 57

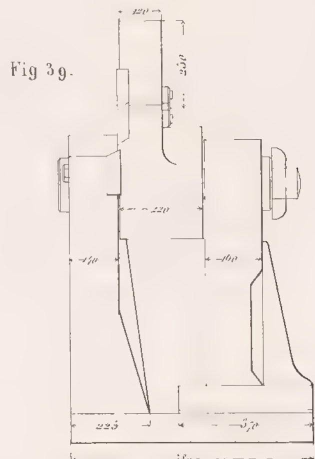


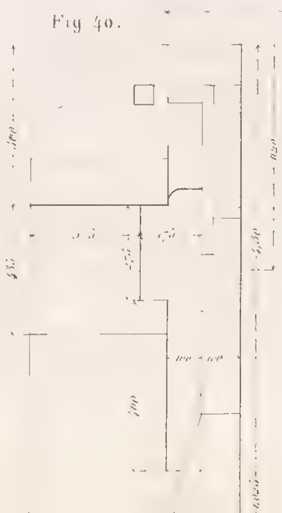


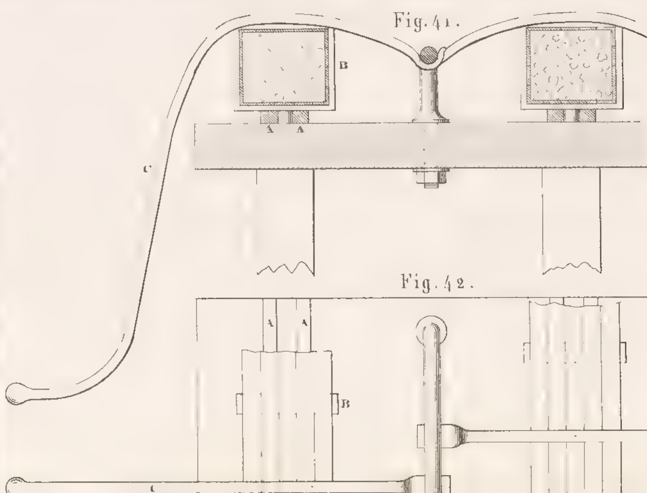
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Fig 38.
4,800


Fig 39.
120
220
225
380


Fig 40.


Fig. 41.
B
A
C
Fig. 42.
2,500

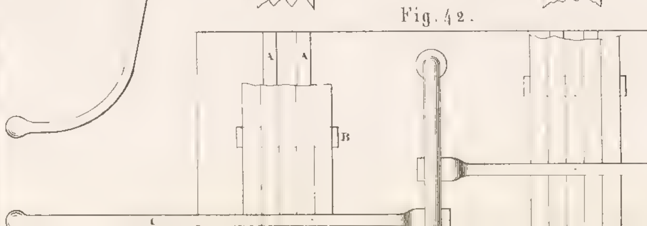


Fig. 43.

C D E

Fig. 44.

A B F

Fig. 45.

a b c

Echelle pour les fig. 38, 39, 40.

1 2 3 4 5 6 7 8 9 1 Mètre

Echelle pour les fig. 41, 42

1 2 3 4 5 6 Décim.

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Fig. 31.

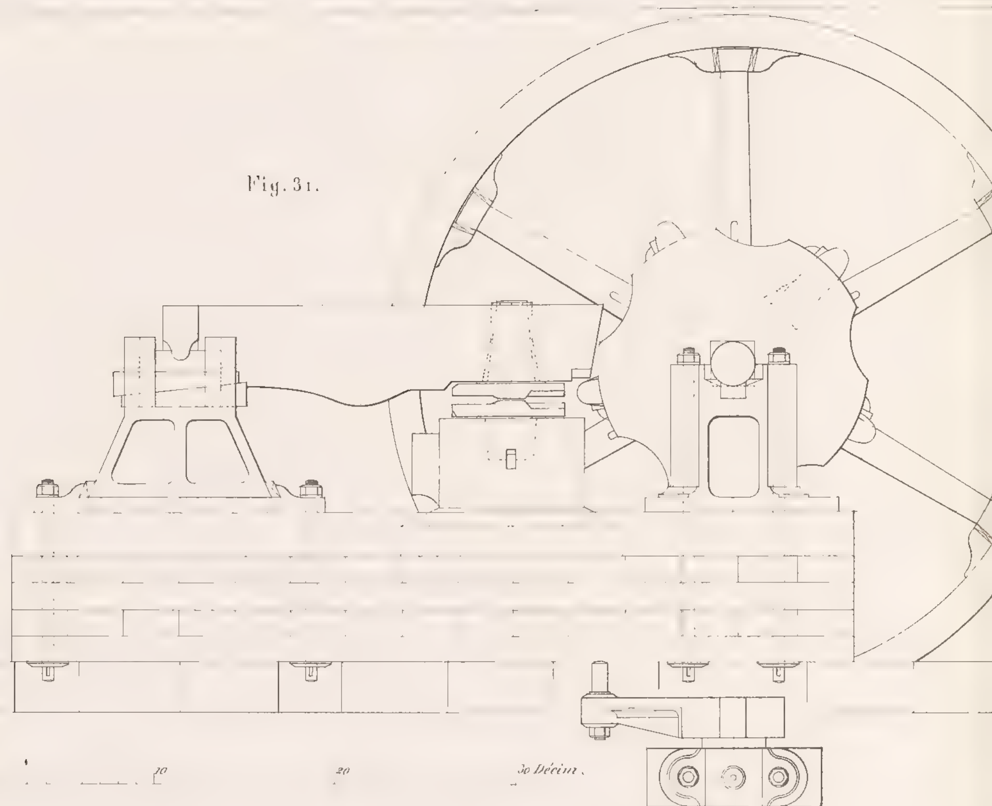


Fig. 32.

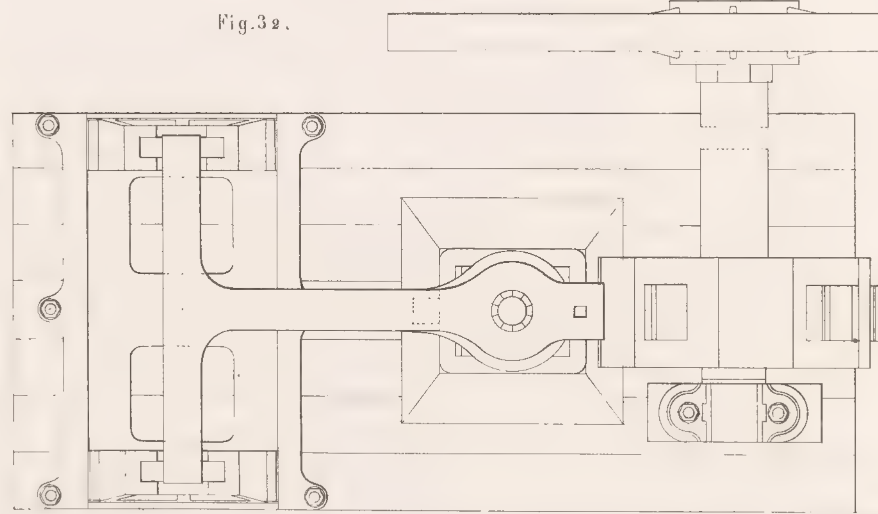


Fig. 33.

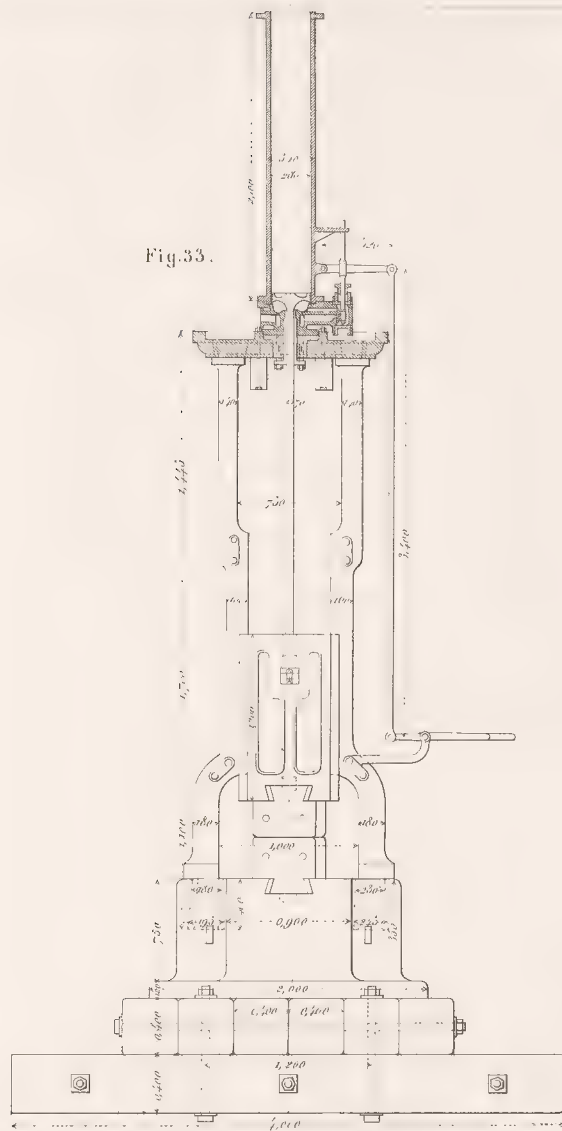


Fig. 34.

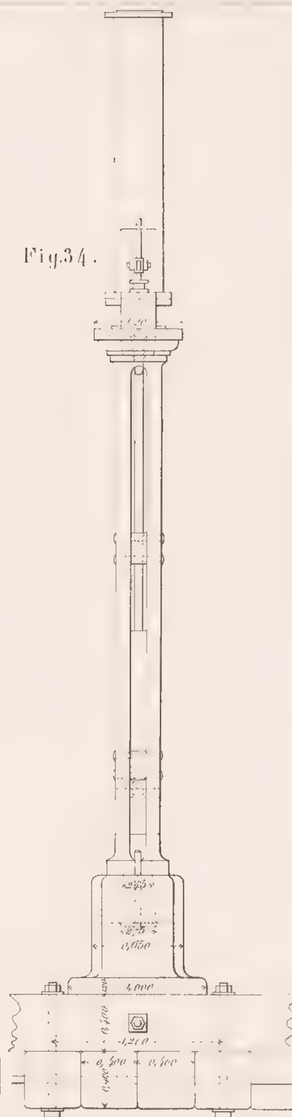


Fig. 35.

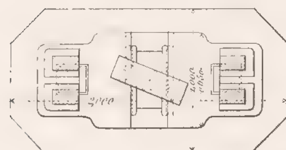


Fig. 36.

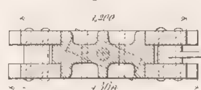


Fig. 37



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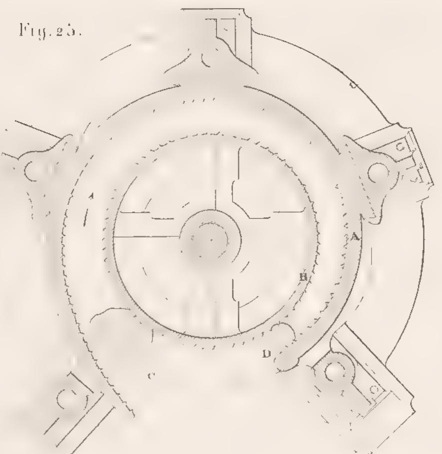


Fig. 25.

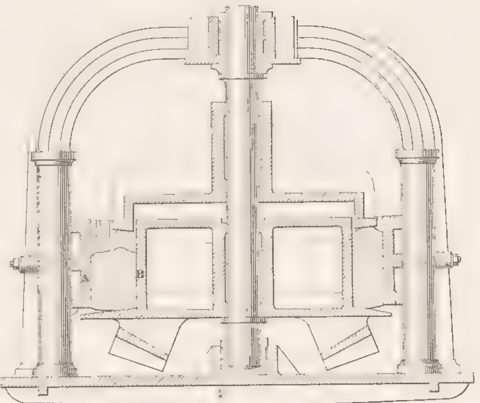


Fig. 26.

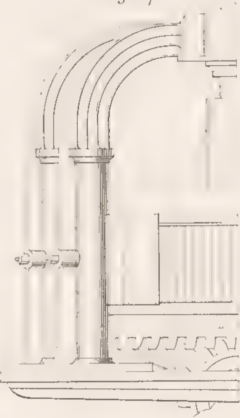


Fig. 27.

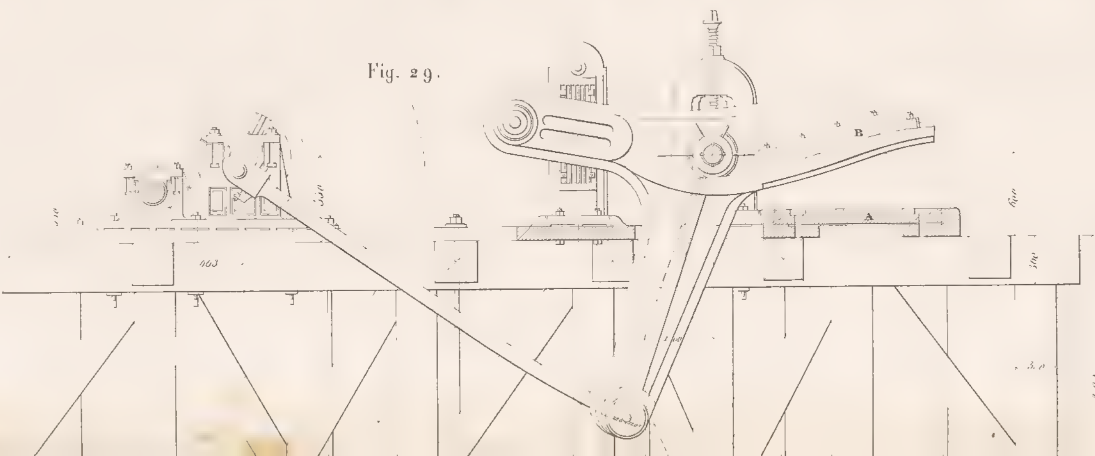


Fig. 29.

3,400

1,920 · 1,280 · 1,850 · 1,00 · 1,344 · 0,520

Fig. 30.

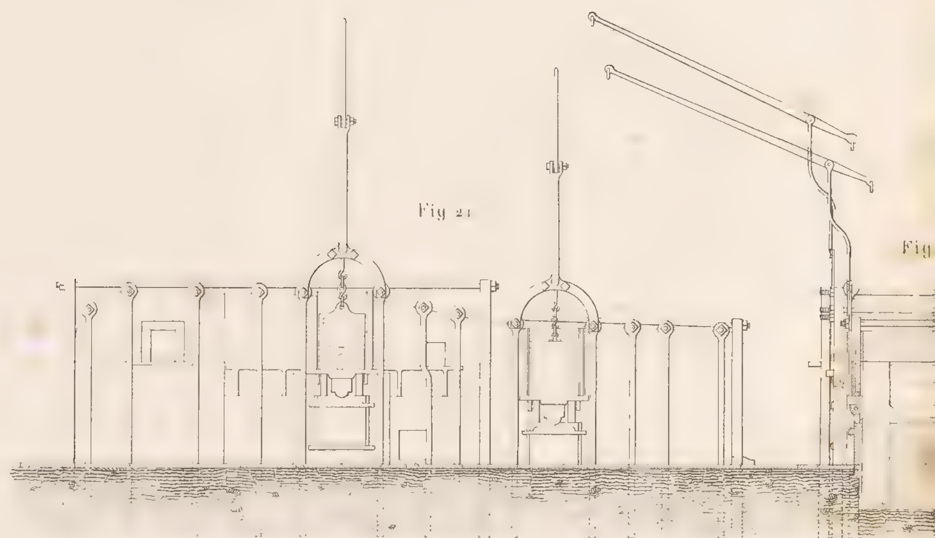
Fig. 28.

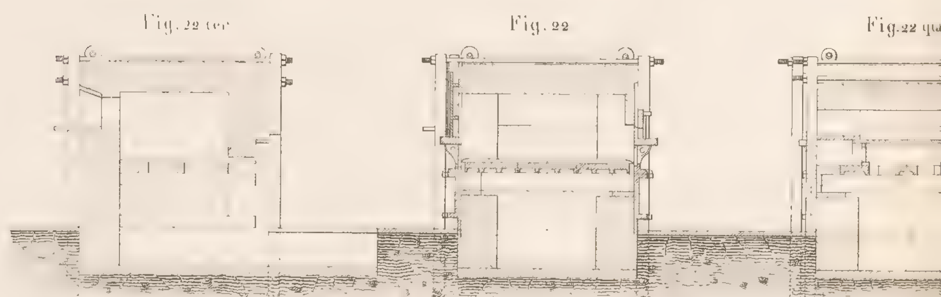
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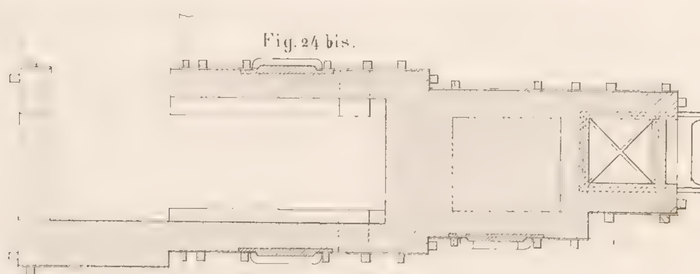
Echelle pour les fig. 29. 30. 3 Mètres

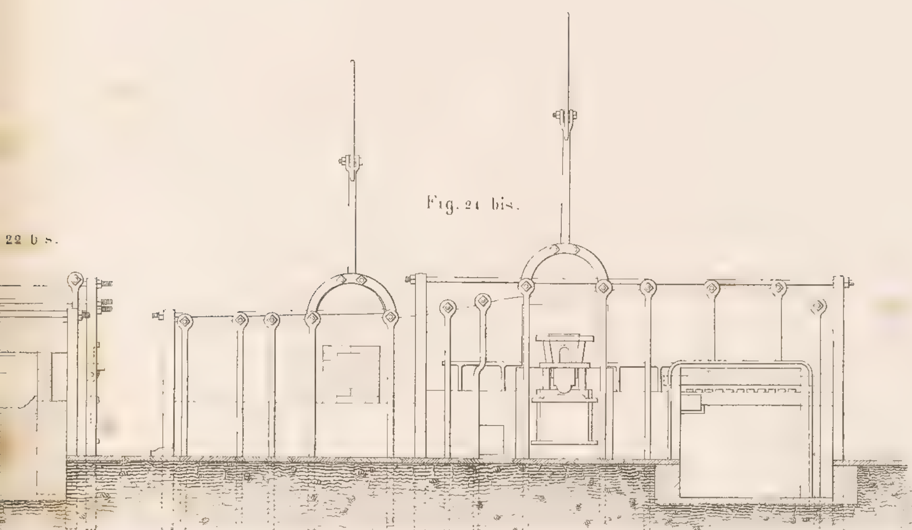
Echelle pour la fig. 28 3 Mètres

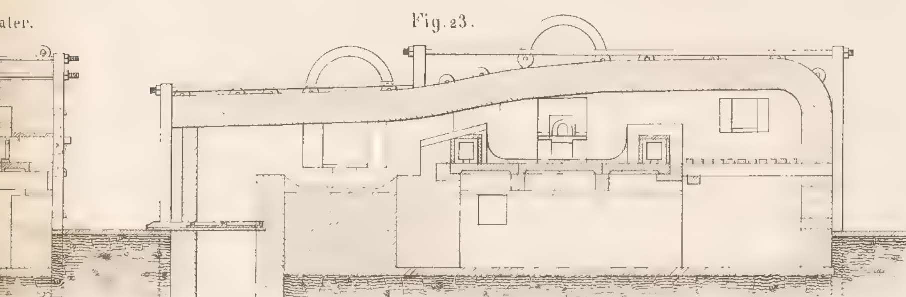
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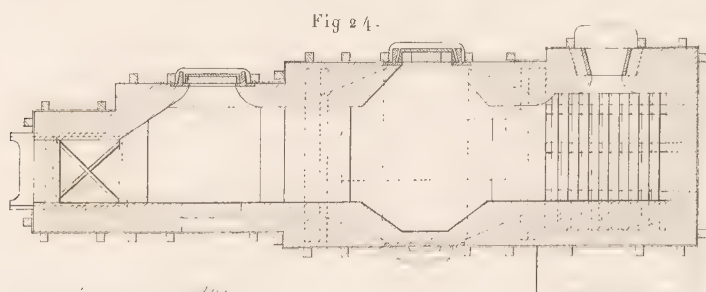

Fig 21
Fig


Fig. 22 ter
Fig. 22
Fig. 22 qu


Fig. 24 bis.

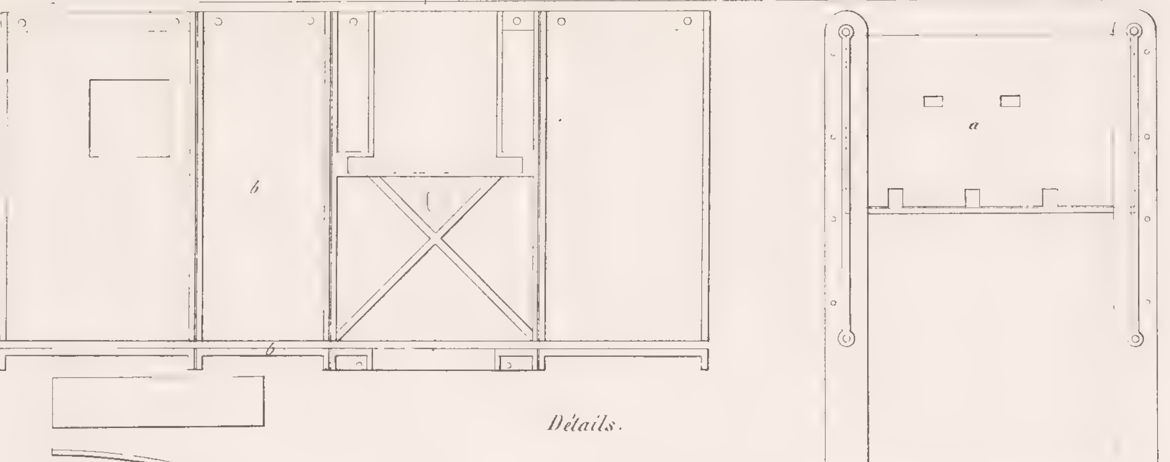

22 bis.
Fig. 21 bis.

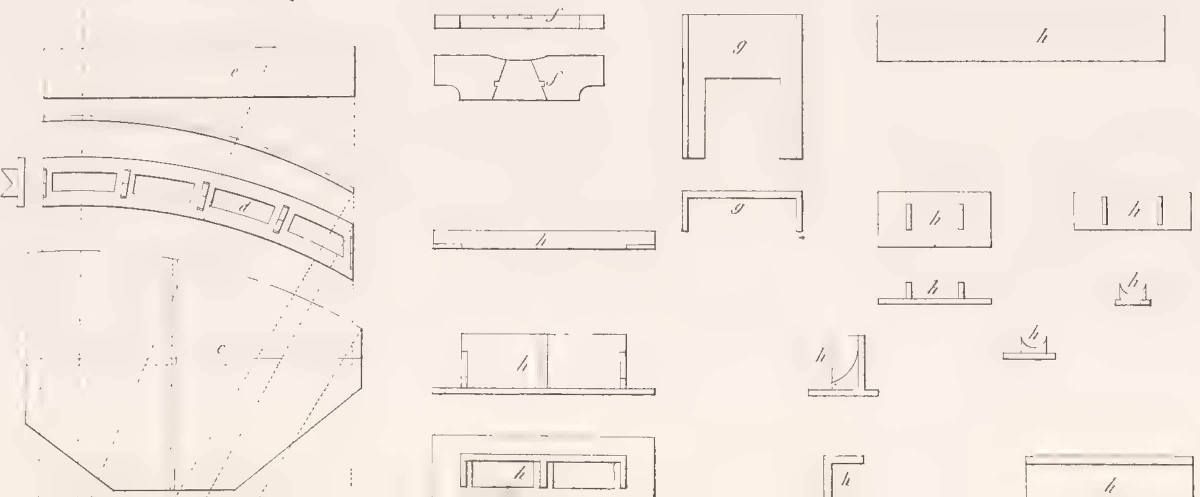

ater.
Fig. 23.


Fig 24.

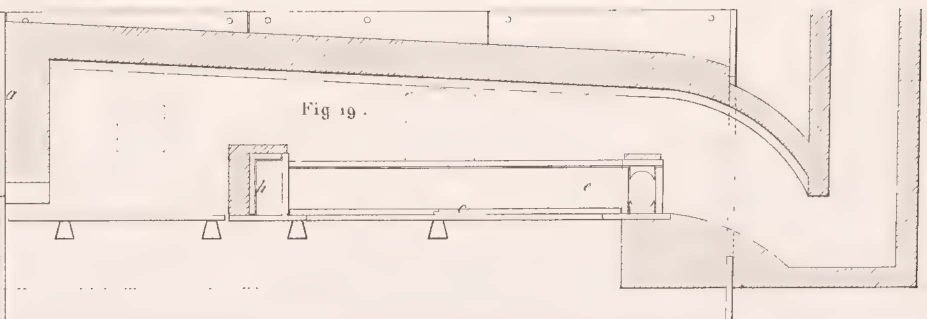
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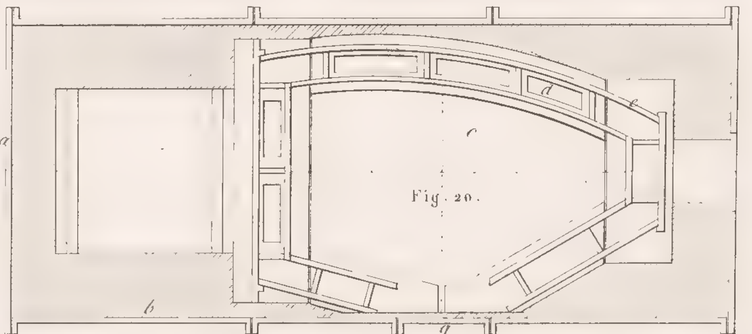
AFFINAGE DE LA FONTE AU FOUR A REVERBERE.











Four bouillant
à une porte de travail.

Ech. 0,03 pour mètre.

Etabl.t et imp.rie de E. Vo let, Editeur.

70-b.4488

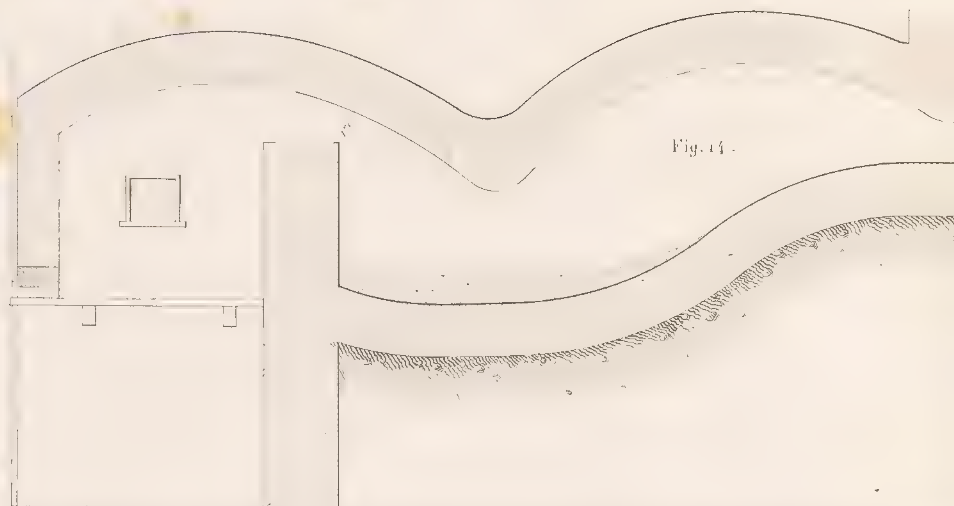


Fig. 14.

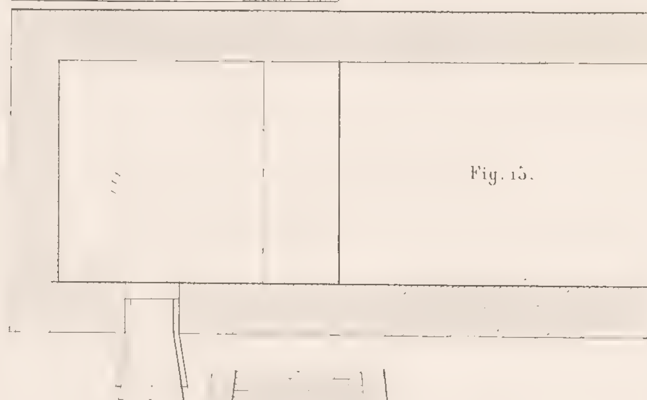


Fig. 15.

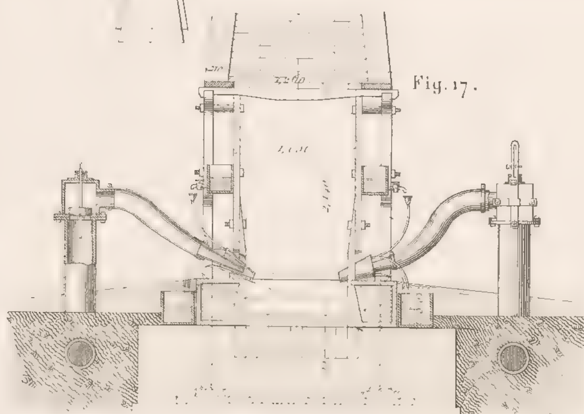


Fig. 17.

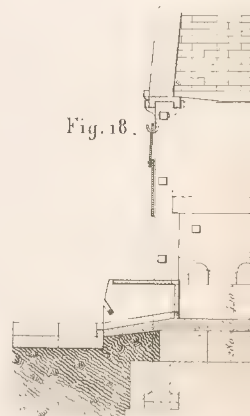
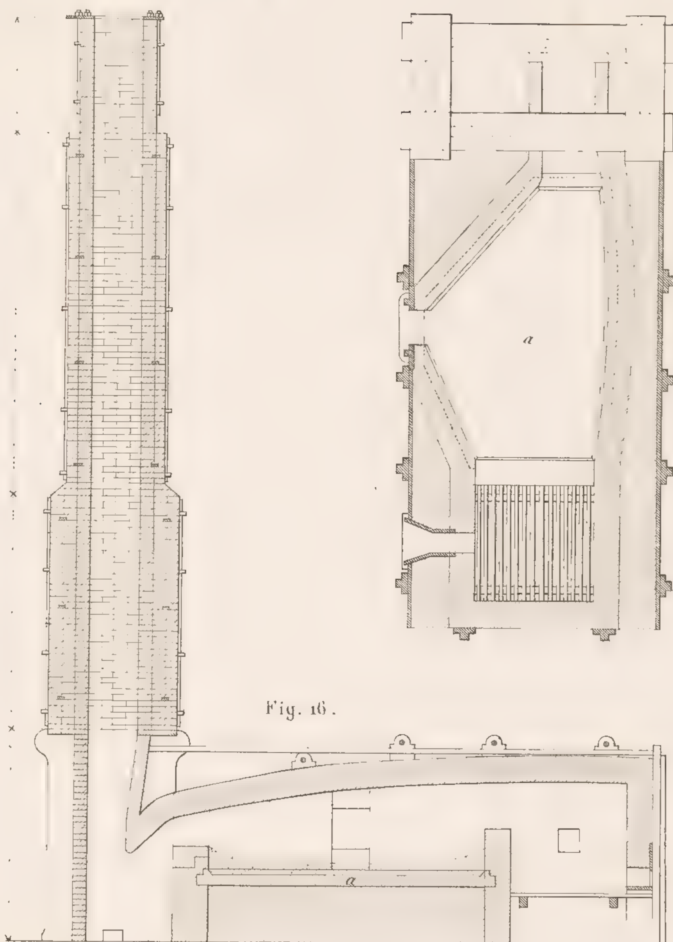


Fig. 18.



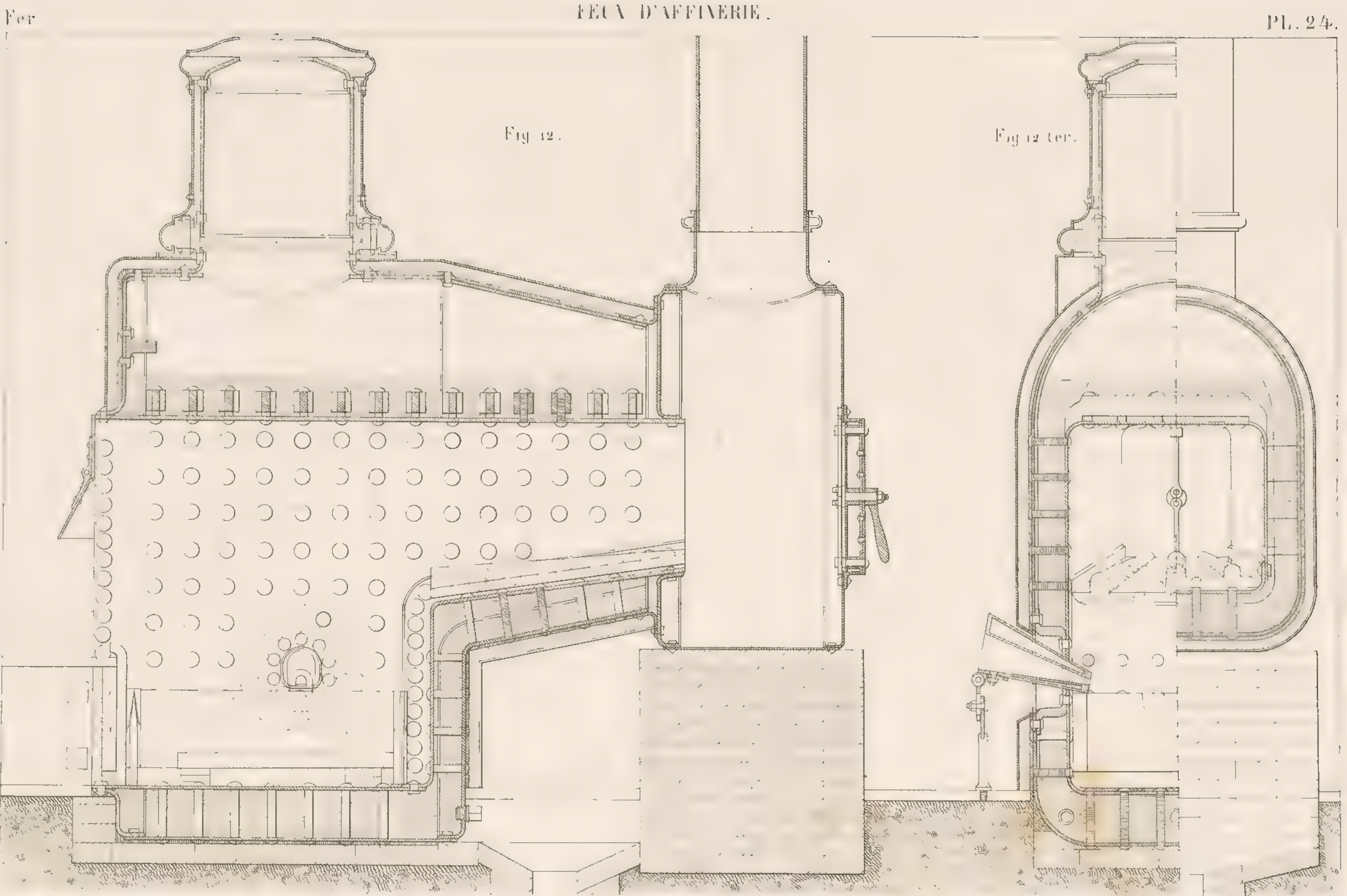
Echelle pour les fig. 14 et 15 0,035 pour mètre.

Echelle pour les fig. 16, 16 bis 17 et 18. 0,02 pour mètre

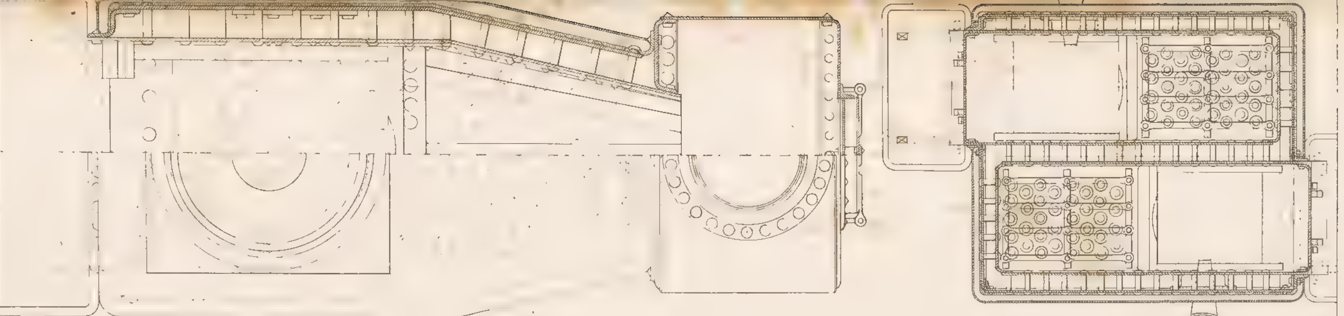
Noblet, Editeur

90-B-4488

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Système C. E. Jullien.



Echelle pour les fig 12, 12 bis et 12 ter $^{1}/_{75}$.
" " " " 13, 13 bis et 13 ter $^{1}/_{30}$.

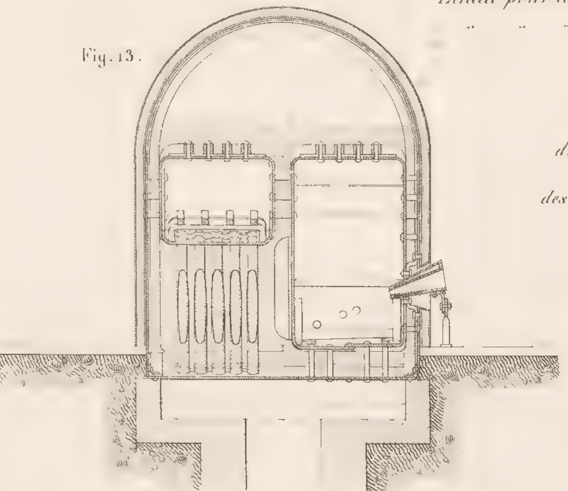


Fig. 13.

Utilisation
des chaleurs perdues
au chauffage
des chaudières à vapeur.

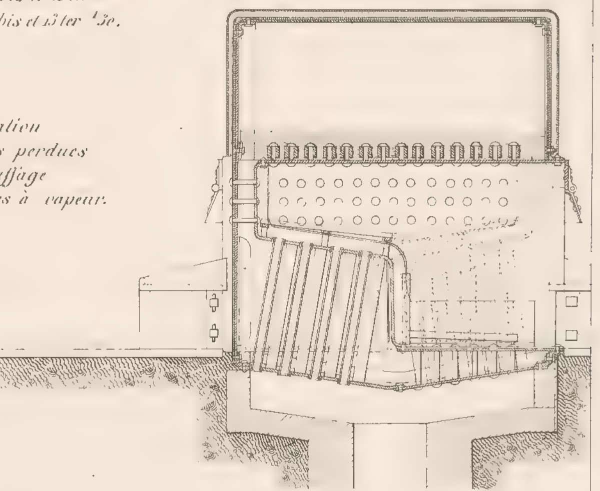


Fig. 13 bis.

TO-B. 4/4 Yx

AFFINAGE AU CHARBON DE BOIS; FEU SOUFFLÉ DIT FEU COMTOIS.

Fig. 6.

Vue de face.

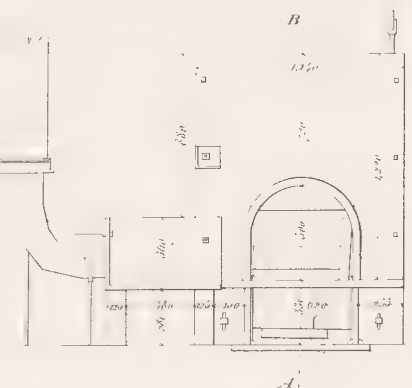


Fig. 7.

Vue de côté de la porte

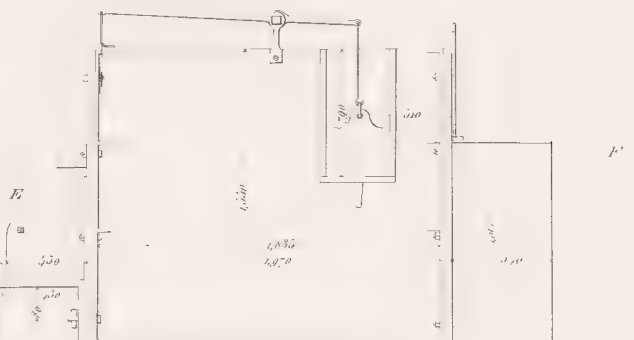


Fig. 8.

Coupe transversale suivant CD.

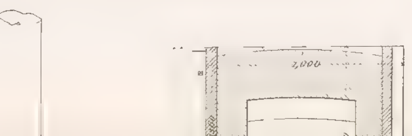
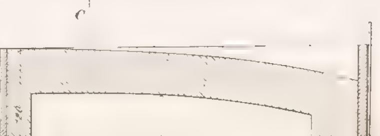


Fig. 9.

Coupe longitudinale suivant AB.



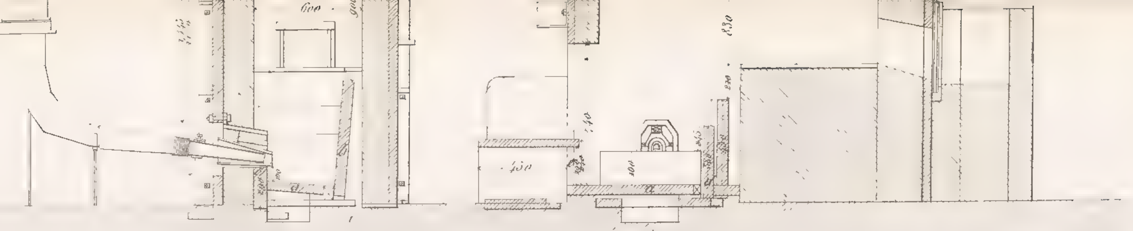


Fig. 11.

Vue de derrière.

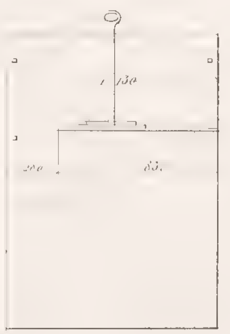
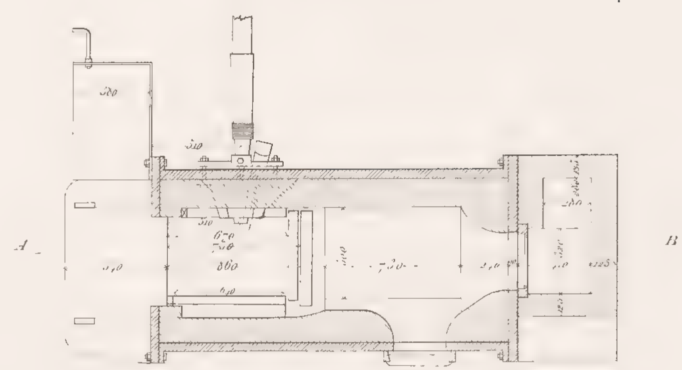


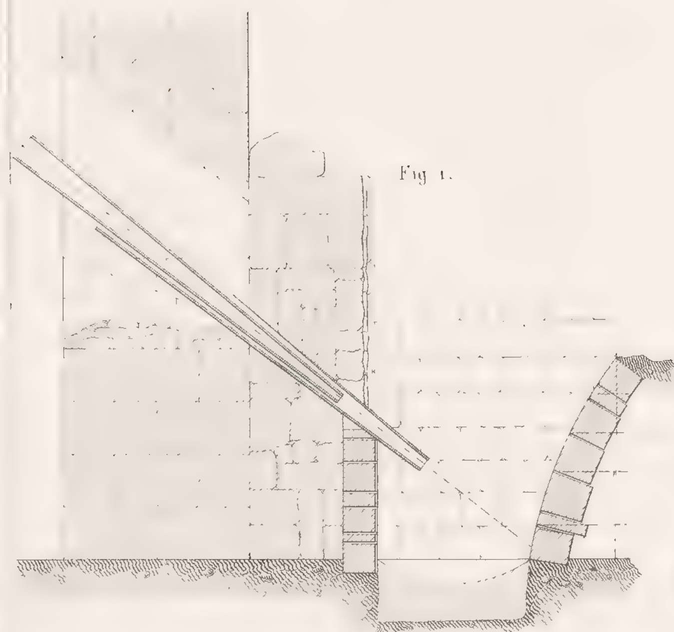
Fig. 10.

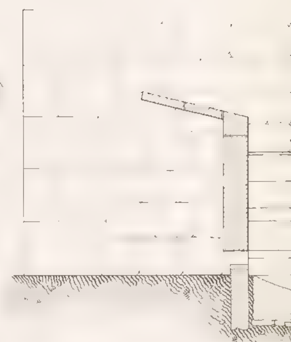
Plan en coupe suivant EF.

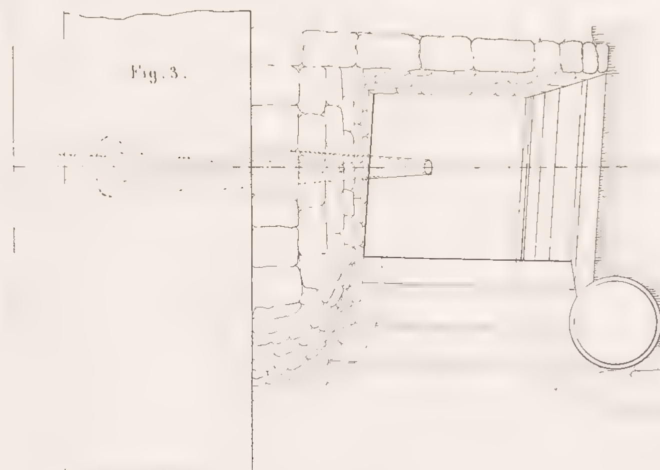


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Foyer et ma







Echelle et impr.

rteau catalans.

Fig. 4.

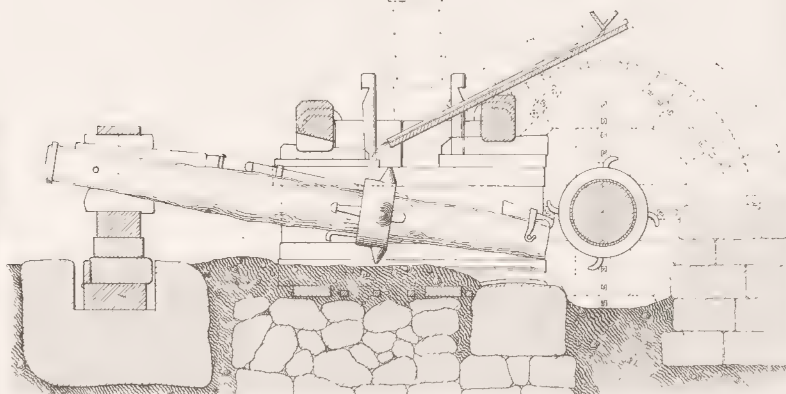


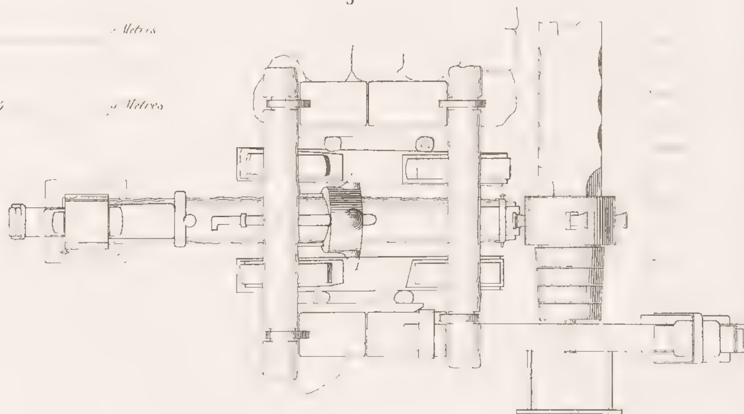
Fig. 5.

Echelle pour les fig 1.2.3

Mètres

Echelle pour les fig. 4, 5.

Mètres



de E. Nerlet edition

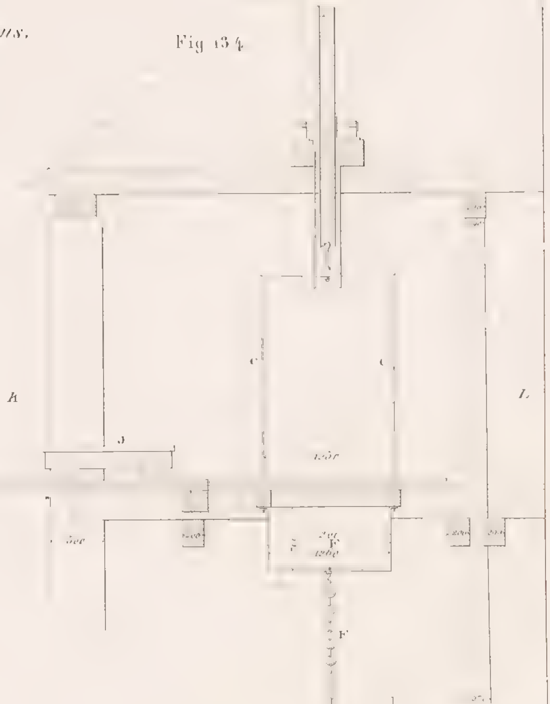
90-B-4438
THE GETTY
LIB

Fonte MONTE-CHARGES. PL. 21.

Système Thomas et Laurens.

Fig. 133.

Coupe par C D.



Plan, Coupe par K L.

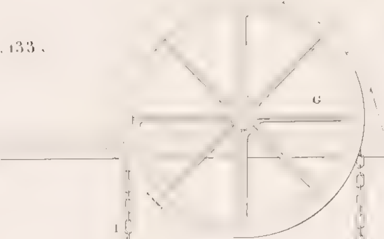


Fig. 134.

Coupe verticale par O P.

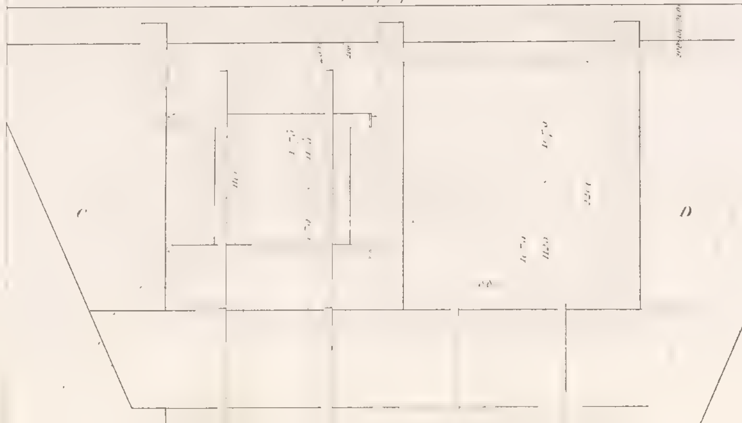


Fig. 135.

Détails.

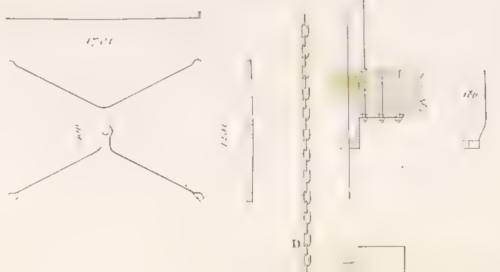


Fig. 136.

Coupe verticale par G H.

Coupe par L F.

Plan. Coupe par I J.

Fig. 137.

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LIBRARY

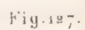
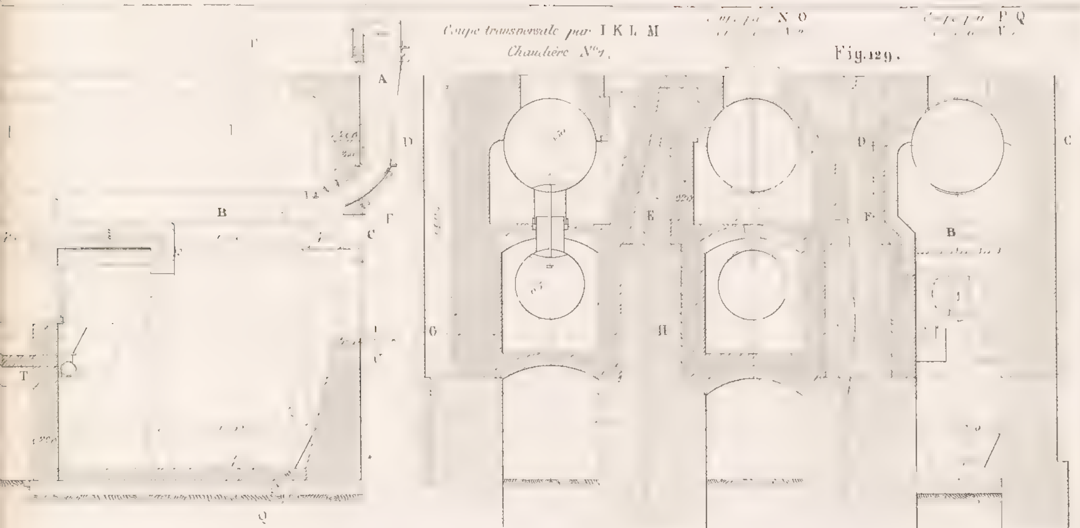
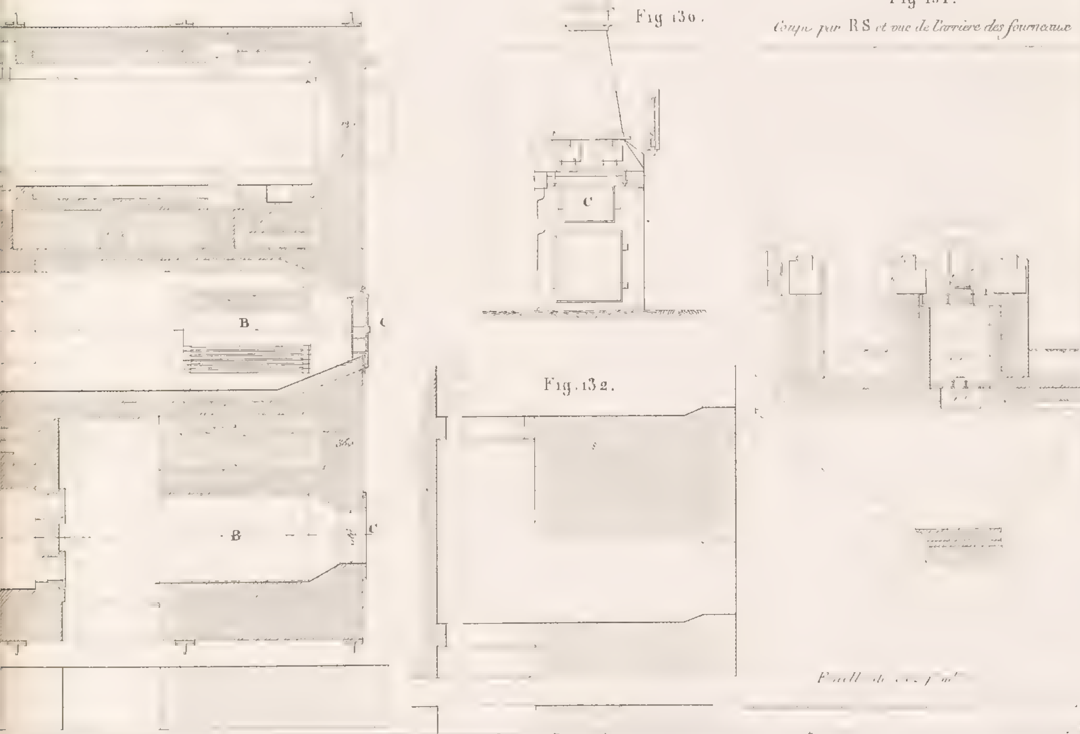


Fig. 127.

Fig. 128.



Système Thomas et Laurens.



de E. Noblet, Éditeur

90-B 2488 THE GETTY CENTER

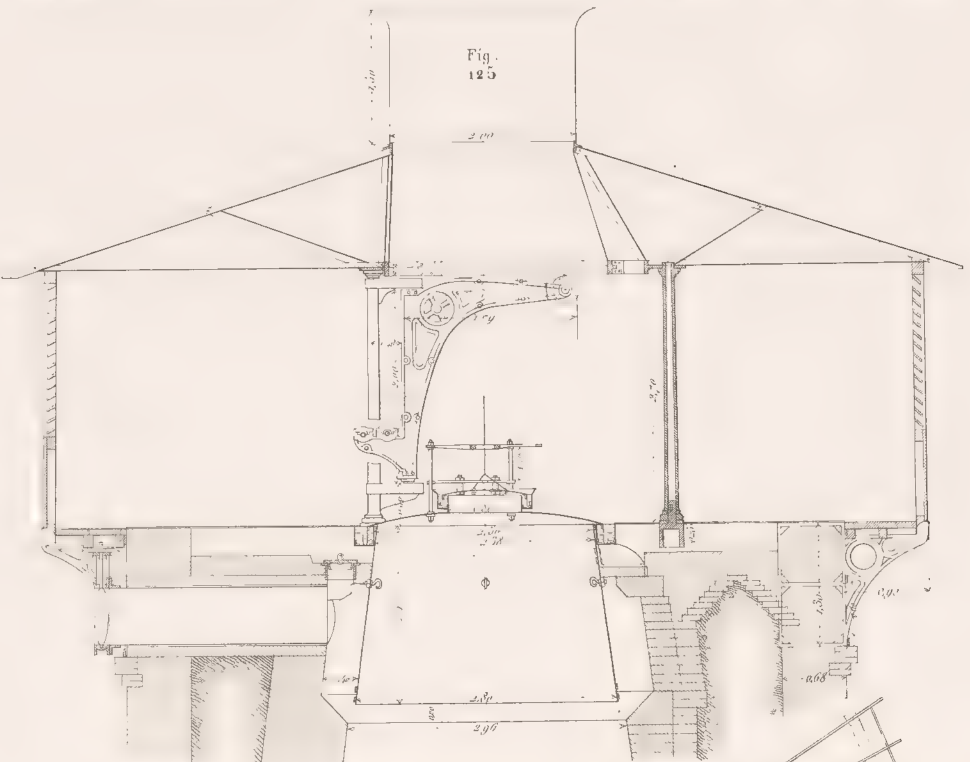
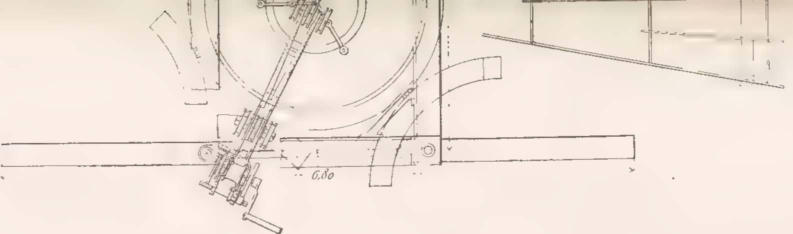

Fig. 125
2,00
2,96
0,68


Fig. 126.



Système Thomas et Laurens.

Fig. 121.

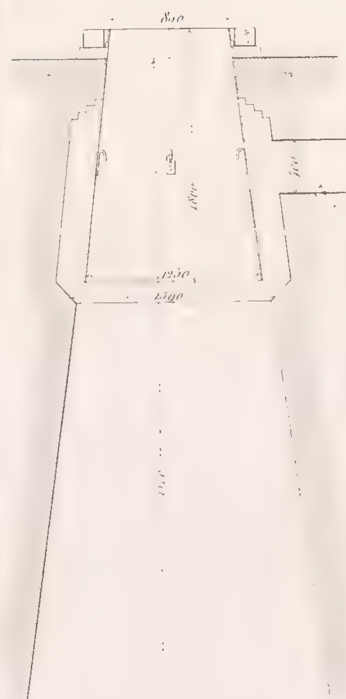


Fig. 122.

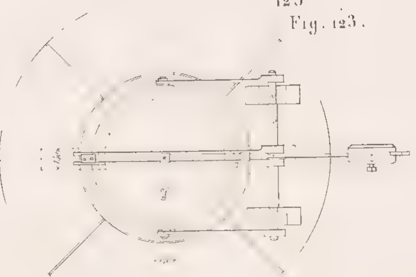
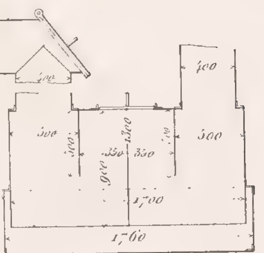


Fig. 124.



125
Fig. 123.

Echelle des fig. 121, 122, 123, 124 — 1/40.
" " fig. 125, 126 — 1/60.

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Fig. 108.

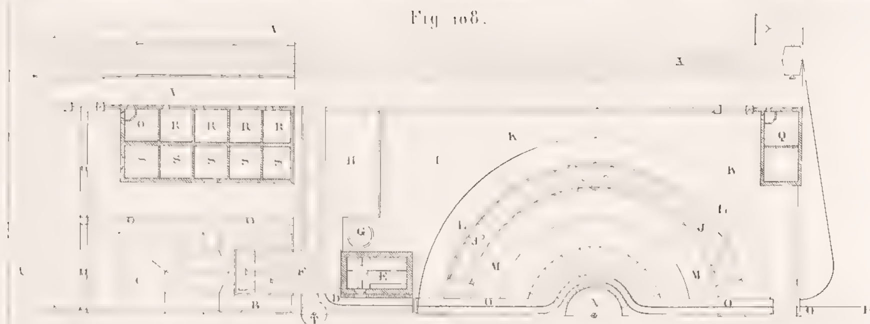


Fig. 109.

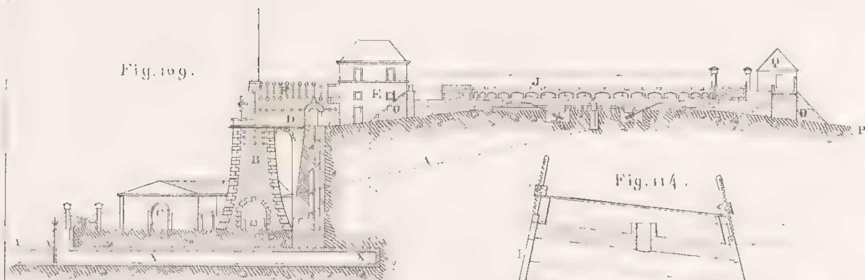


Fig. 114.

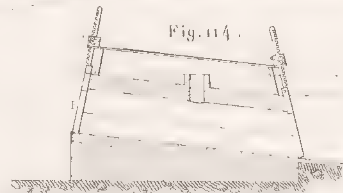


Fig. 115.

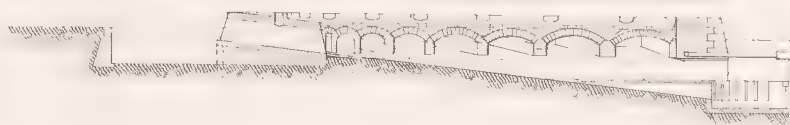


Fig. 116.



Fig. 113.

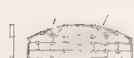


Fig. 118.

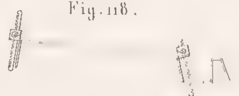


Fig. 117.

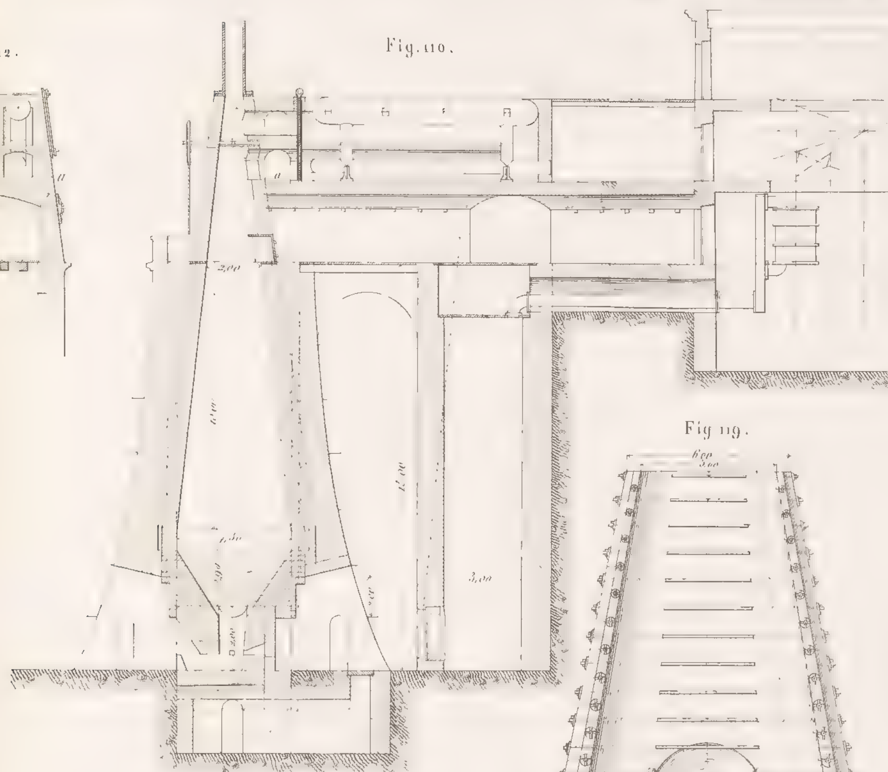


Echelle des fig. 108, 109. . . . 0,0012 pour mètre
" " . 110, 111, 112, 115, 116, 119, 120. 0,005 " "
" " 113, 114, 117, 118. . . . . . . 0,01 "

Fig. 112.

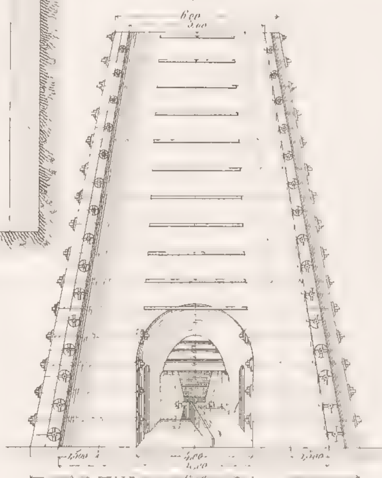


Fig. 110.



Système C. E. Jullien

Fig. 119.



Système Communeau

Fig. 111.

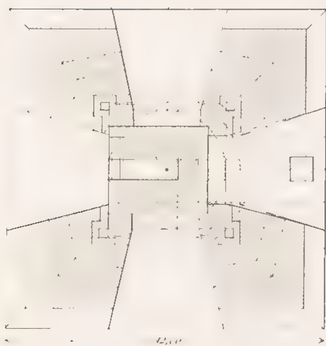
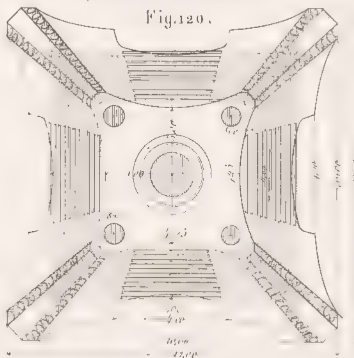


Fig. 120.



70-B-4+88
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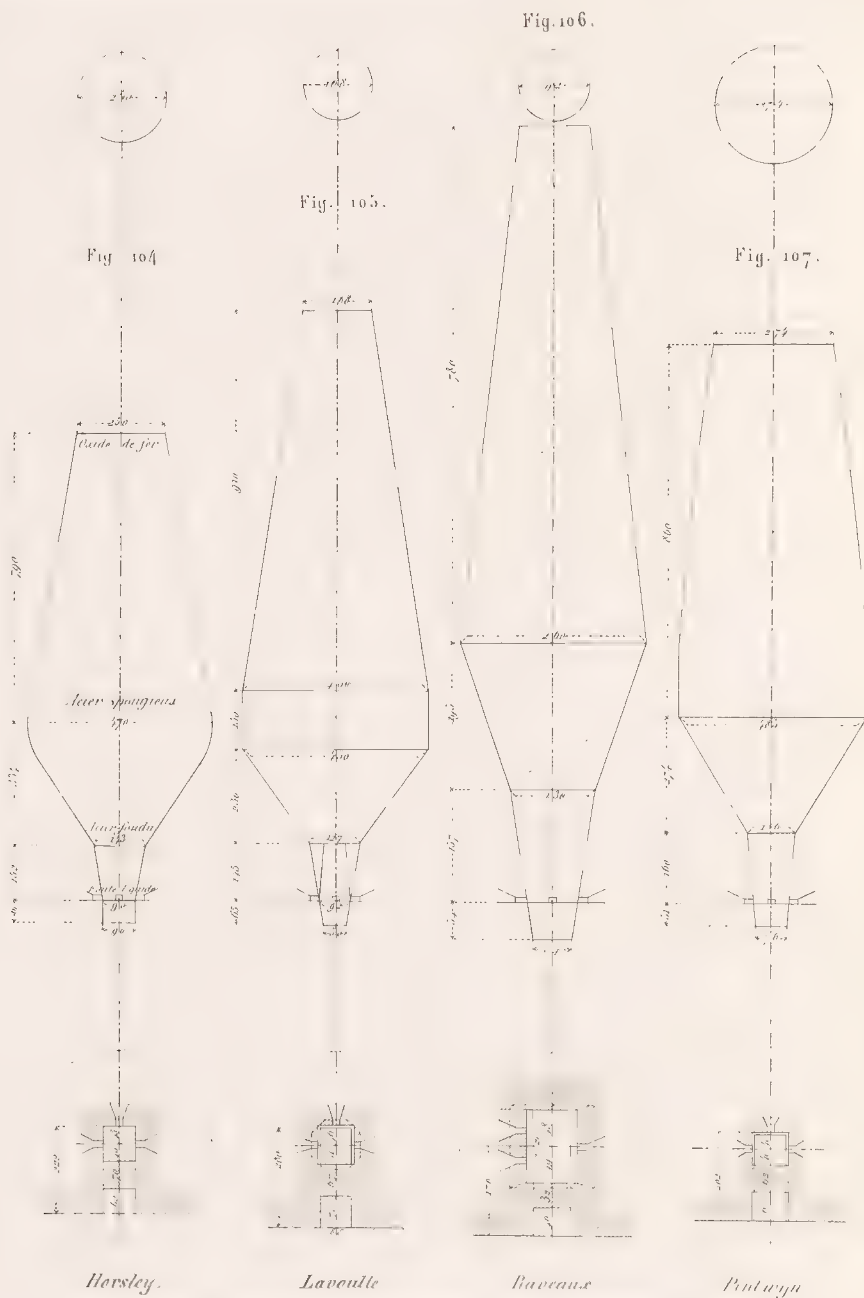
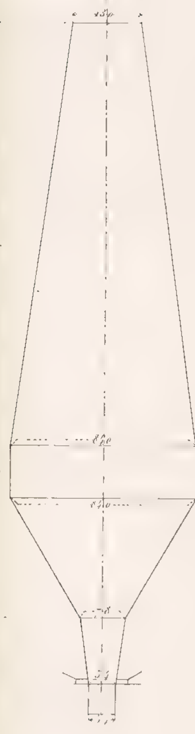

Fig. 104
Fig. 105.
Fig. 106.
Fig. 107.
Oxide de fer
Acier spongieux
Horsley.
Lavoulte
Raveaux
Pontwyn

Fig. 103



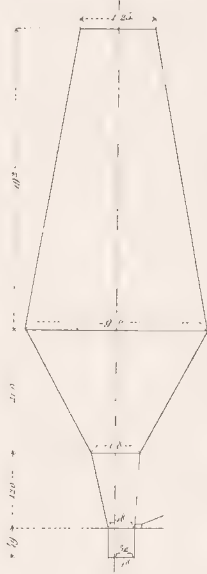
Hayange

Fig. 100.



Harz

Fig. 101.



Oberachstadt

Fig. 102.



Chateau vilain

90-B-4464X
CENTER

HAUTS FOURNEAUX.

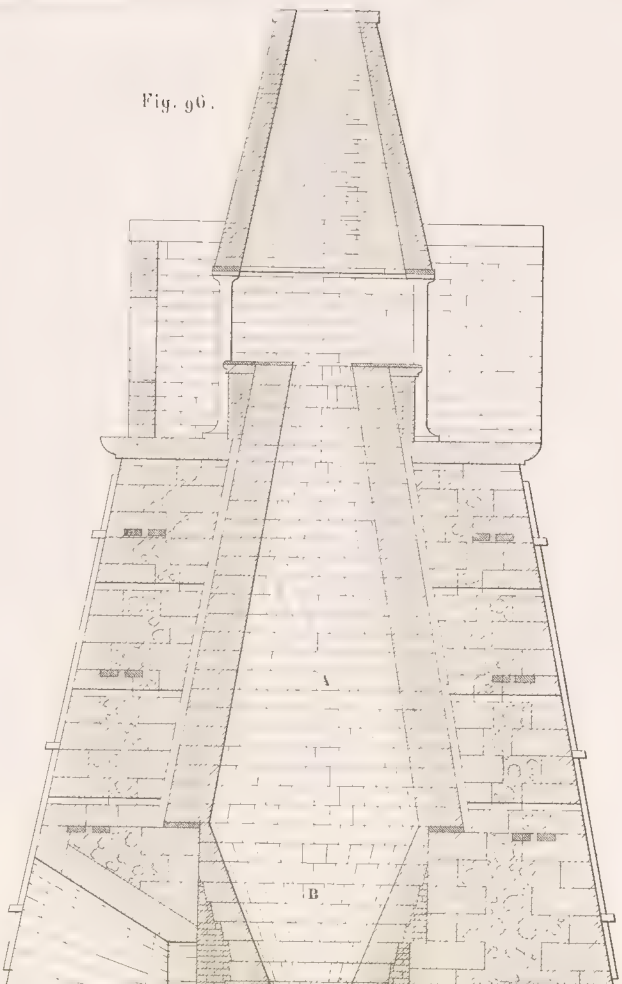


Fig. 96.

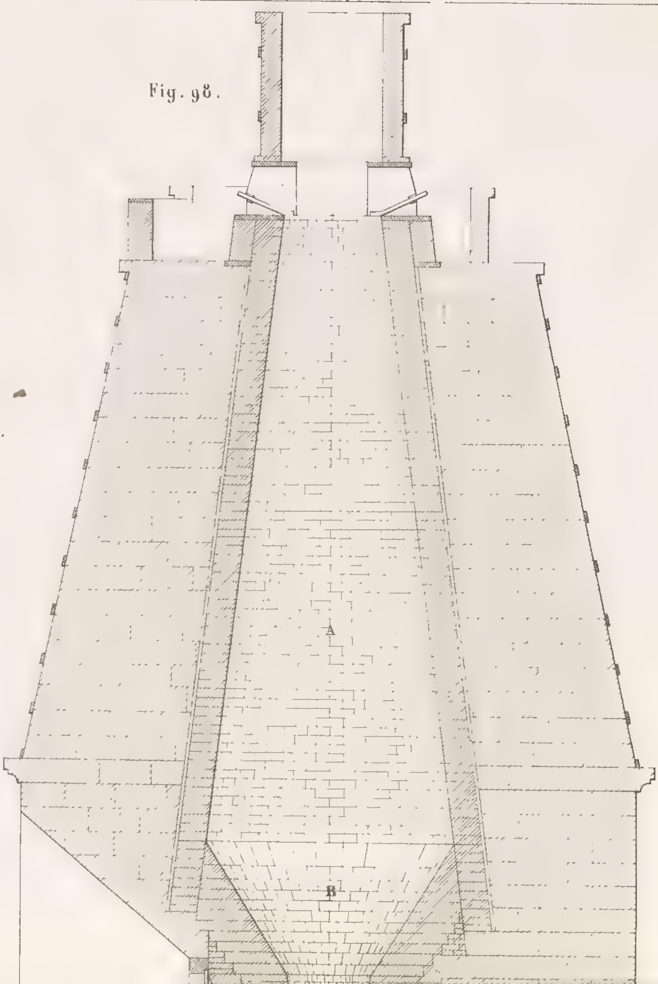
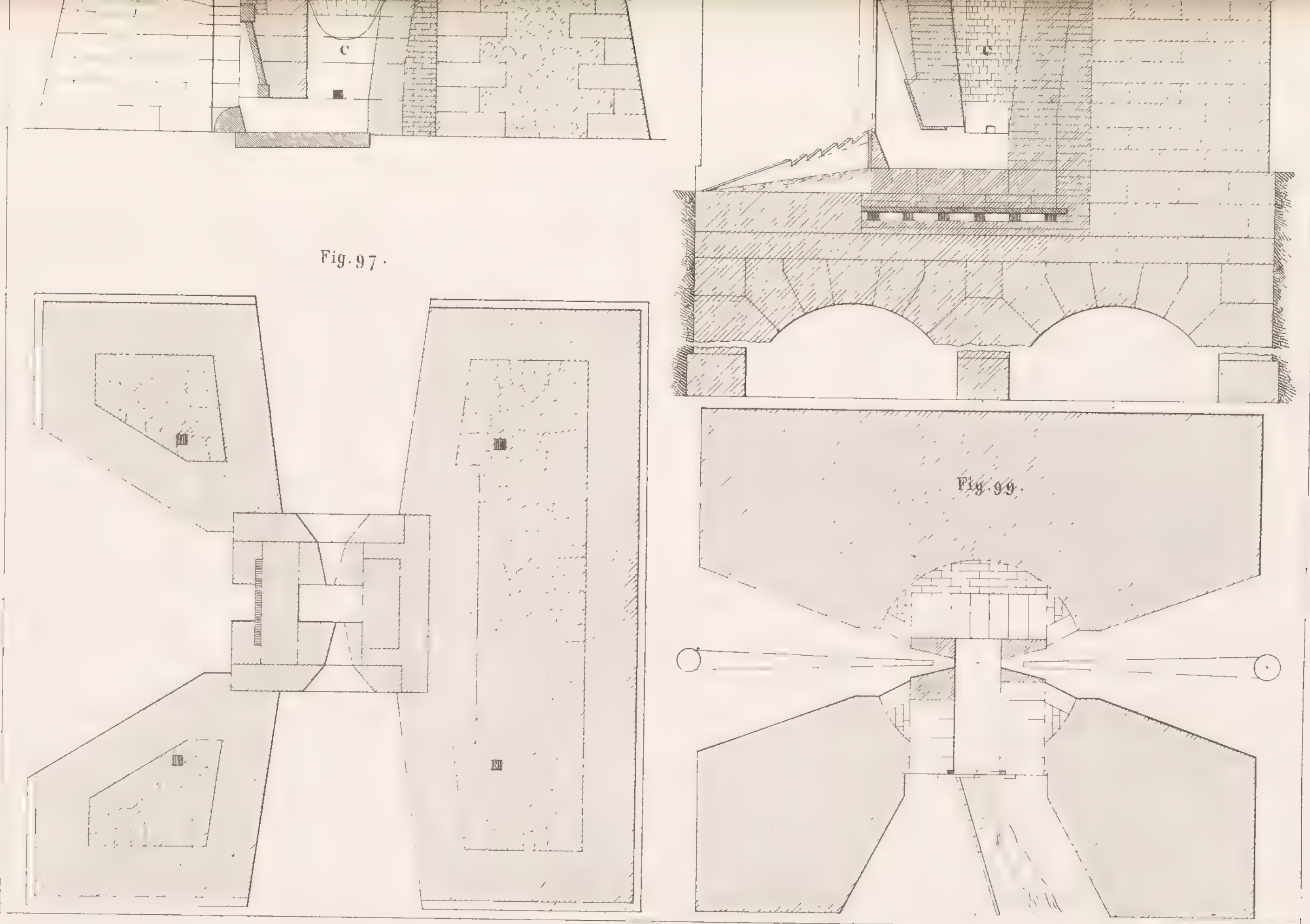
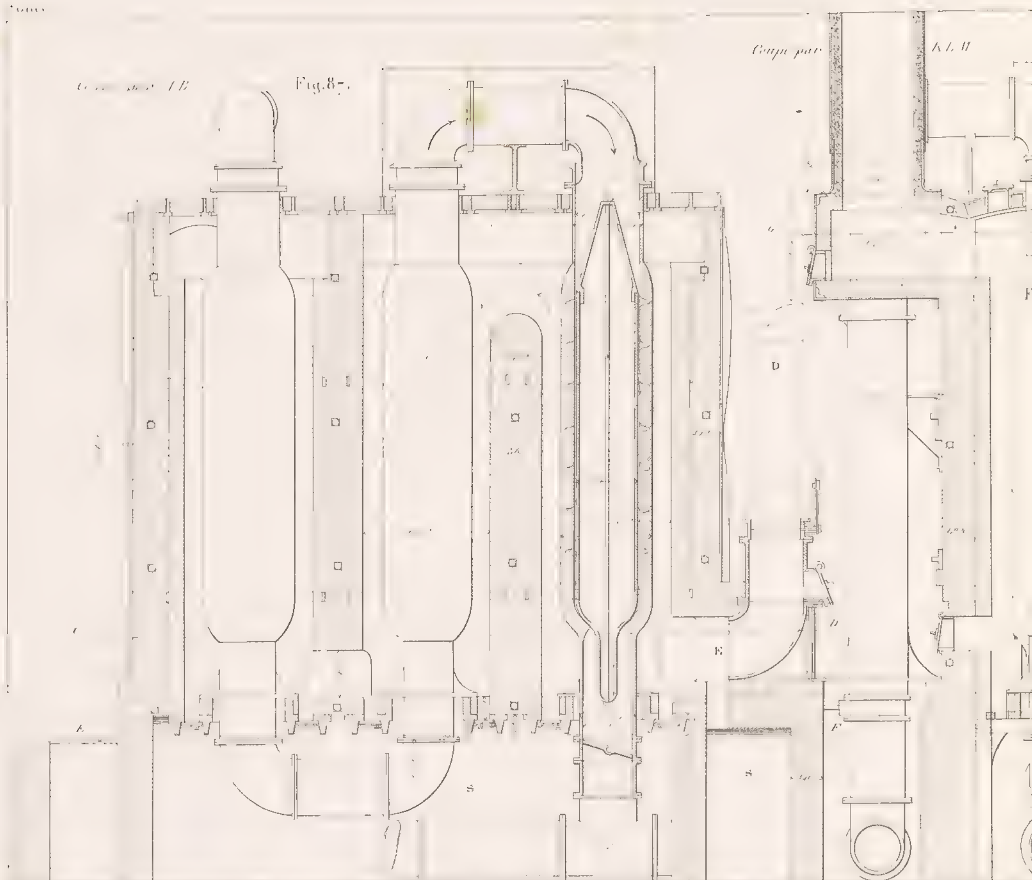


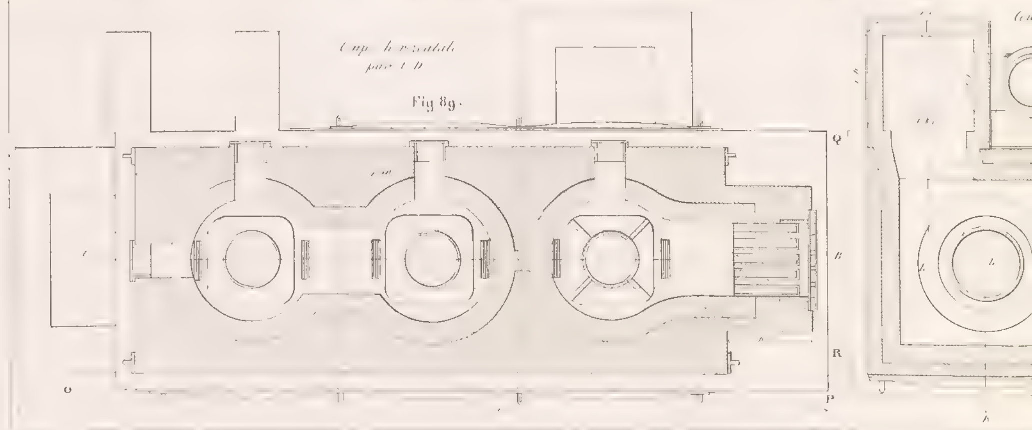
Fig. 98.

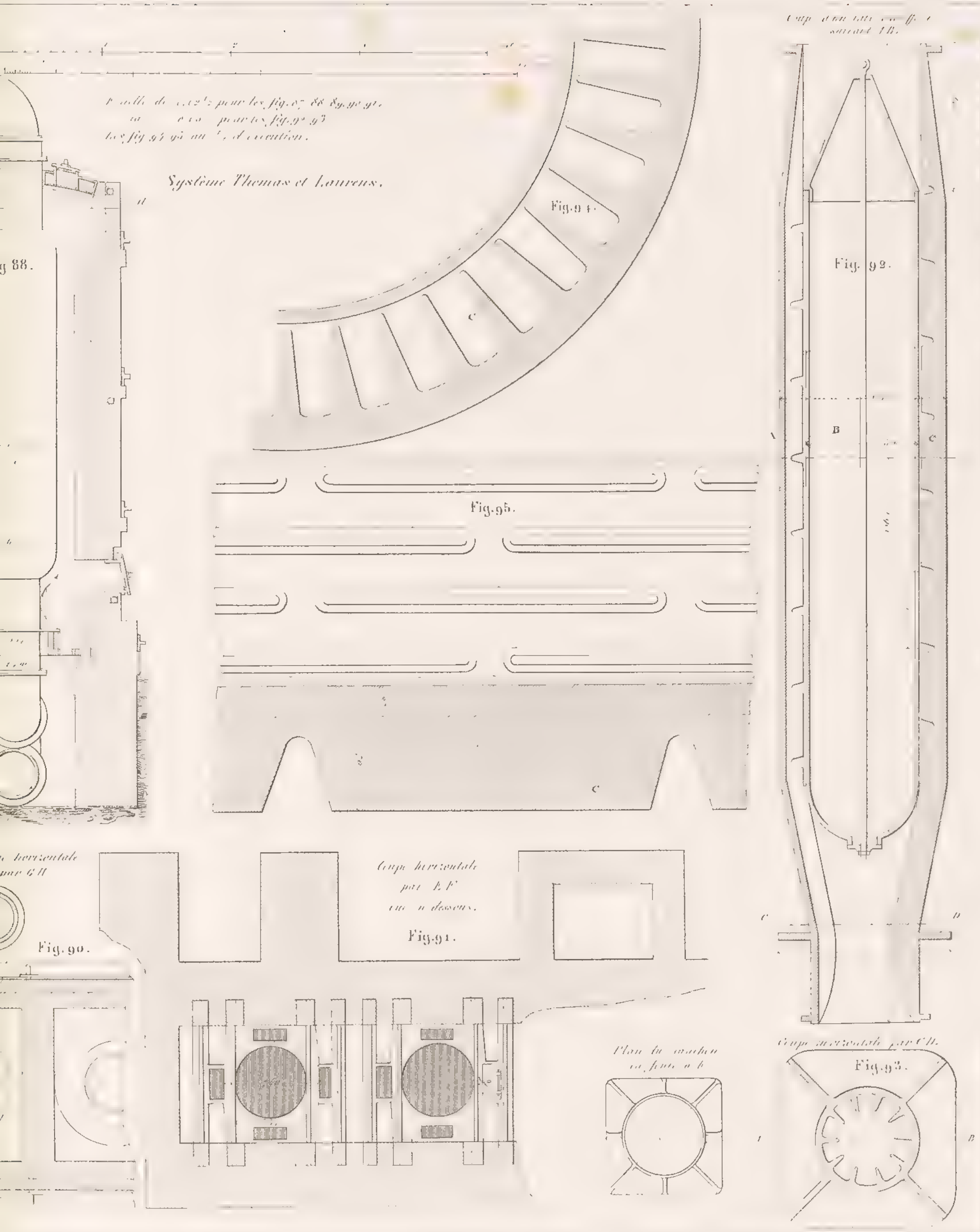


C
C
Fig. 97.
Fig. 99.

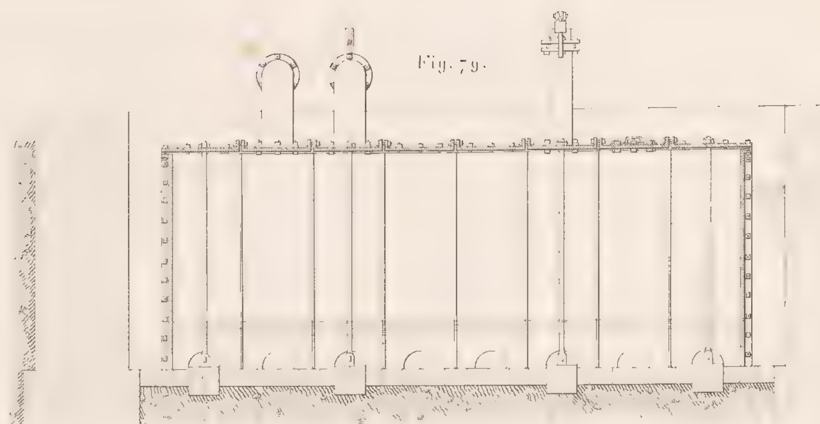
90-12-4488


Fig. 87.
Coupe par
D
E
F
S


Fig 89.
Q
R
P
O


Système Thomas et Laurens.
Fig. 88.
Fig. 90.
Fig. 91.
Fig. 92.
Fig. 93.
Fig. 94.
Fig. 95.

TO B-4488 THE GETTY CENTER



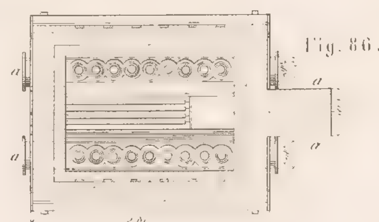


Fig. 85.



Appareil Calder.

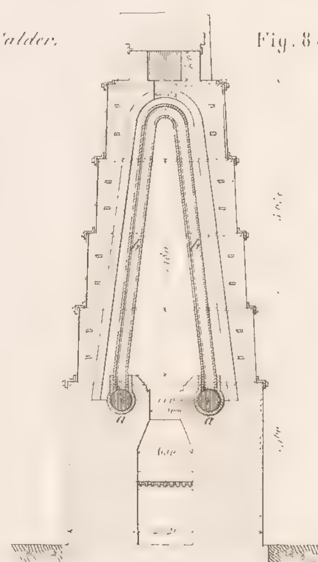
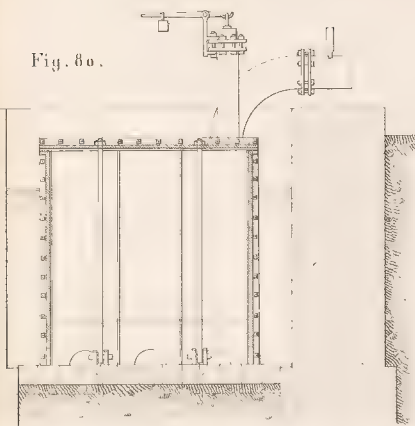


Fig. 80.

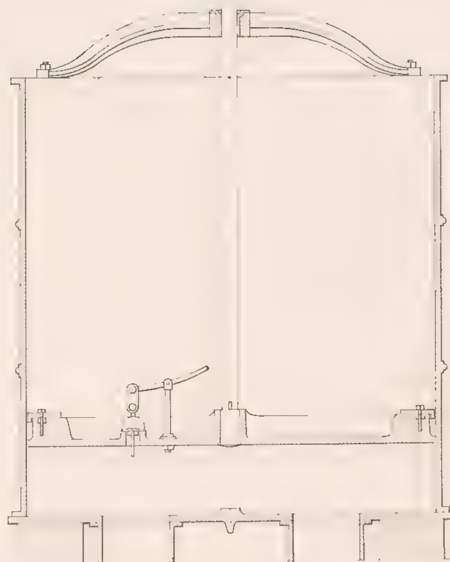


Ech pour les fig 79. 80.

Ech pour les fig. 81. 82. 83.

Ech pour les fig 84. 85. 86.

Fig. 81.



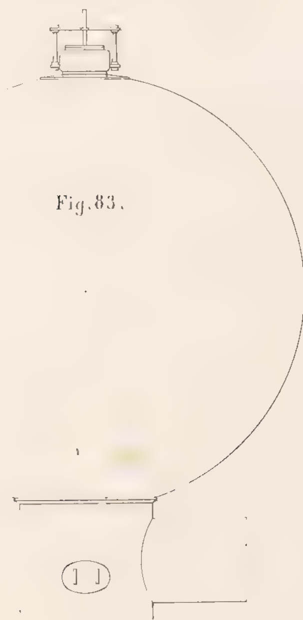
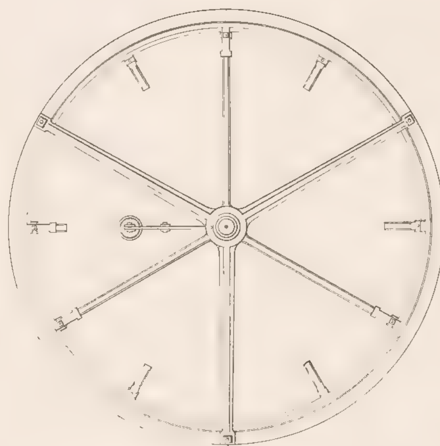


Fig. 83.

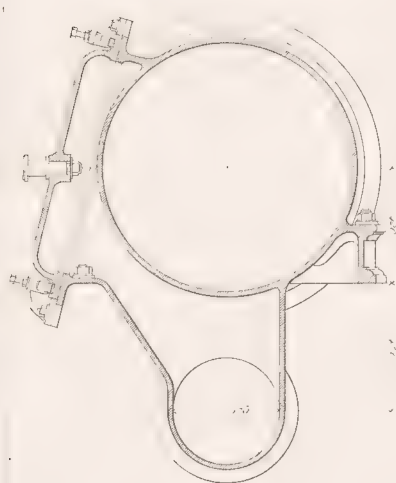
Fig. 82.



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Système Thei

Fig 76. *Coupe verticale suivant AB.*



Fig

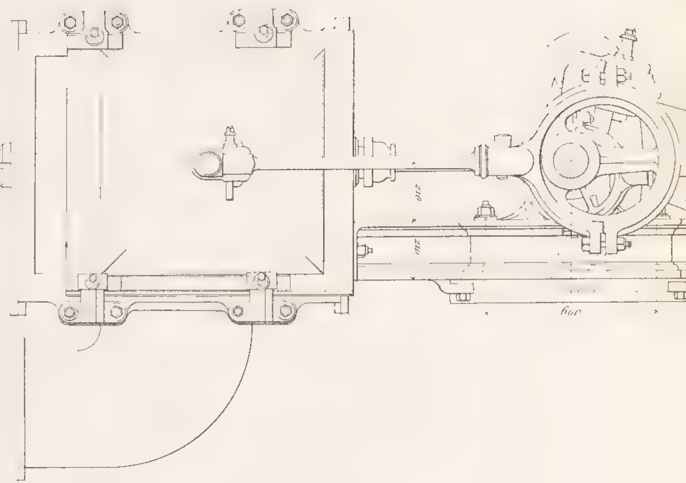
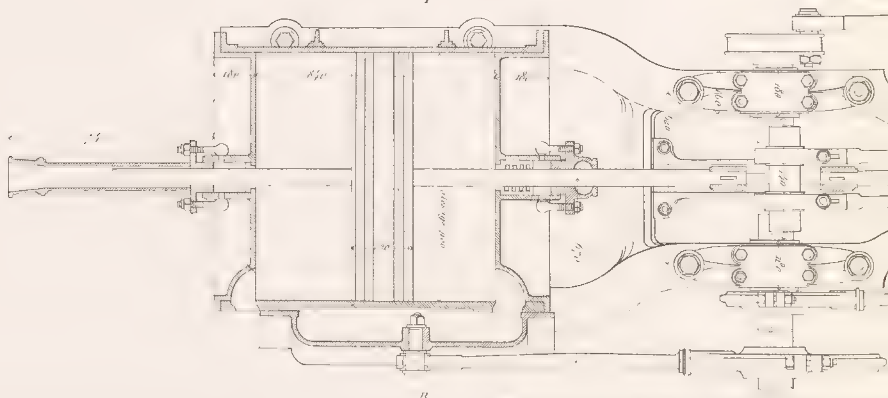


Fig 78. *Plan et coupe*





nas et Laurens.

75. Élévation

Fig. 77. Coupe verticale brisée suivant C D E F

totale du bâtis 4m 815

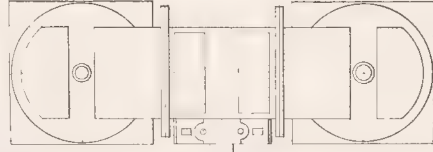
orizontale par l'axe des cylindres

Échelle 1/20

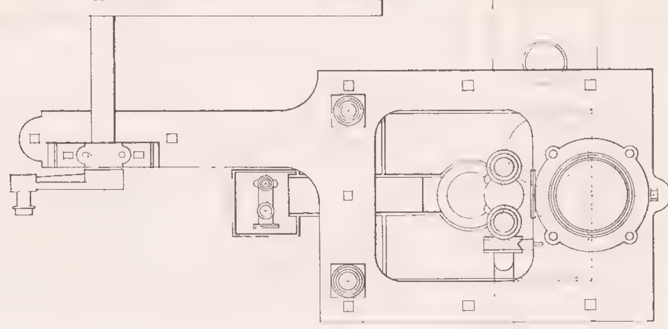
Mètres

90-B 4488 THE GETTY CENTER

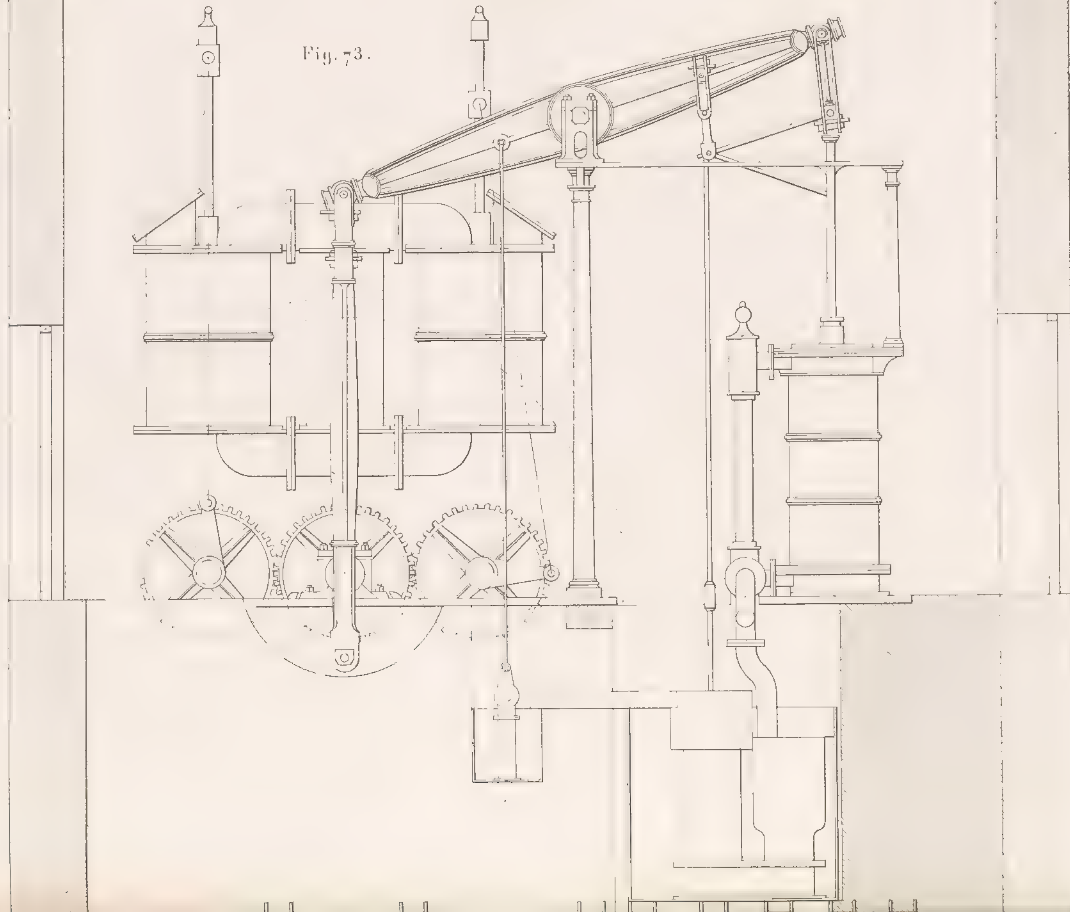
Fig. 74.







Établ^t et imp^rie de E. Noblet, Éditeur


Fig. 73.

70.8 4483

Système Mazeline.

Fig. 70.

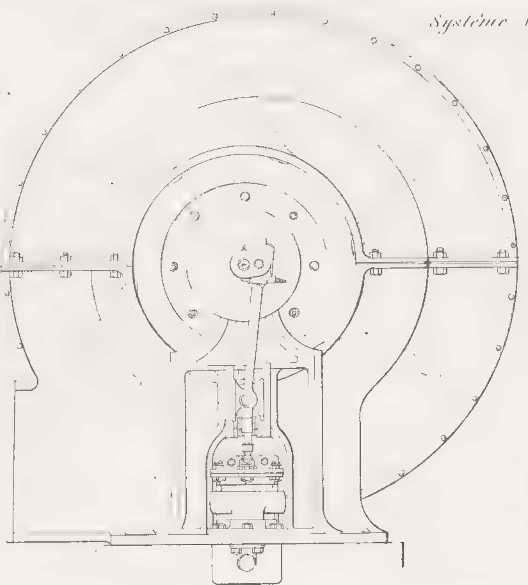
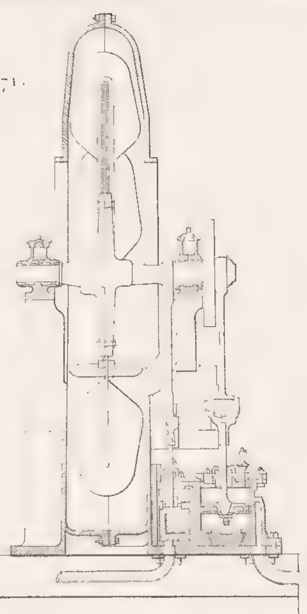
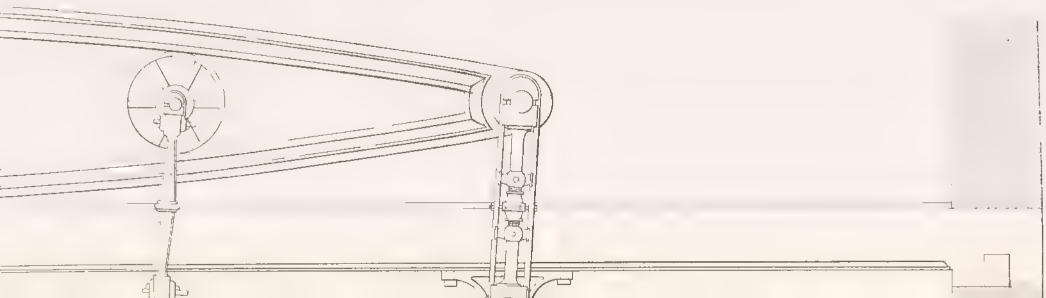


Fig. 71.



Échelle 1/20.



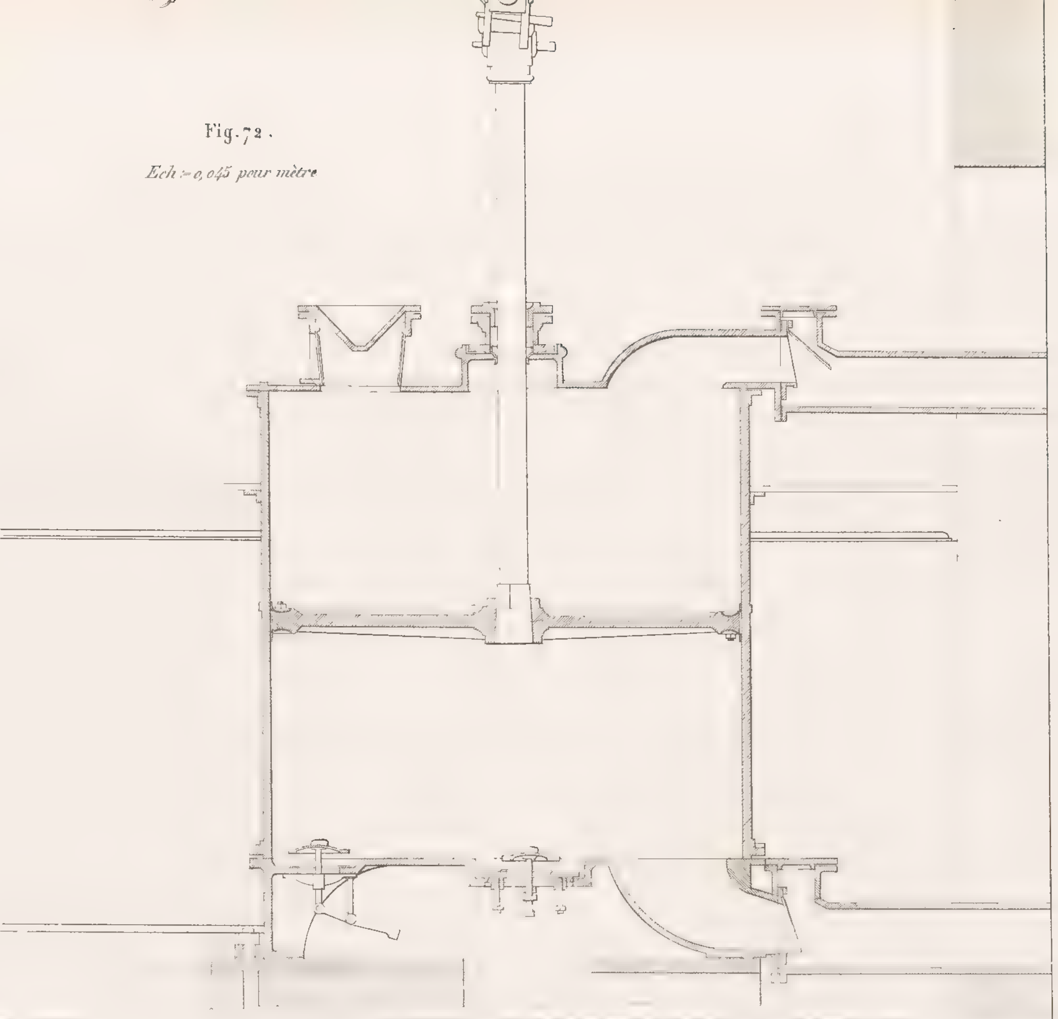
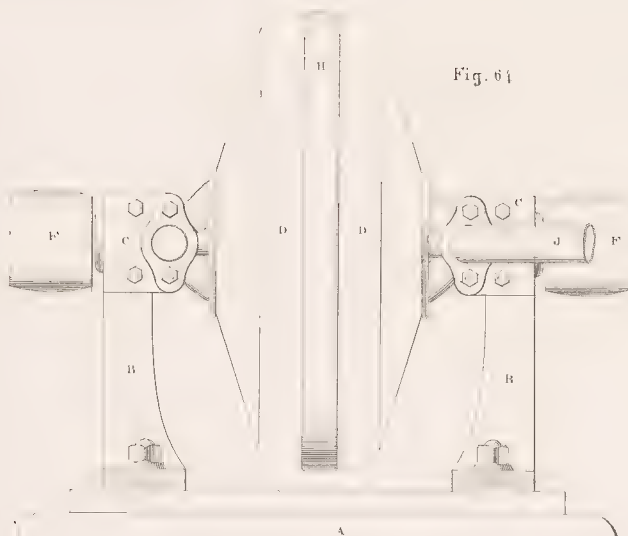


Fig. 72.

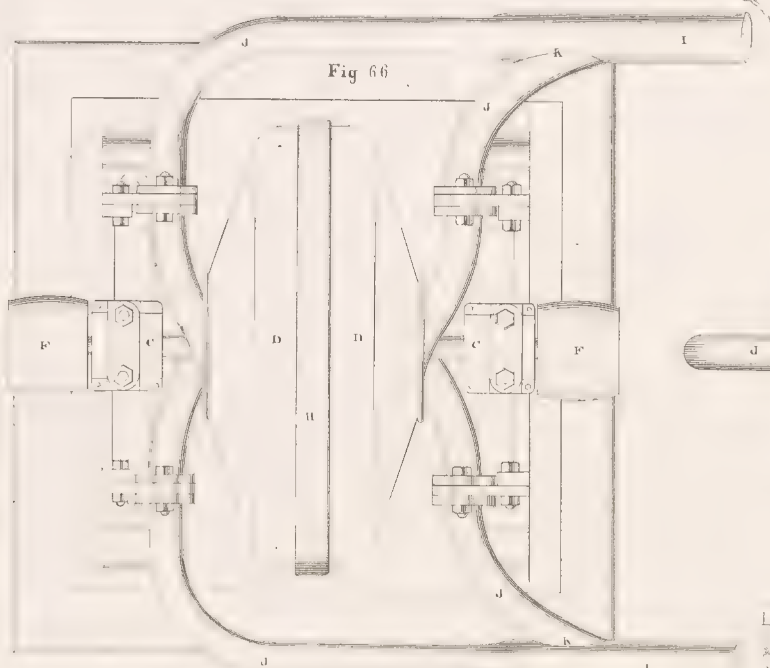
Ech = 0,045 pour mètre

70-B-4488

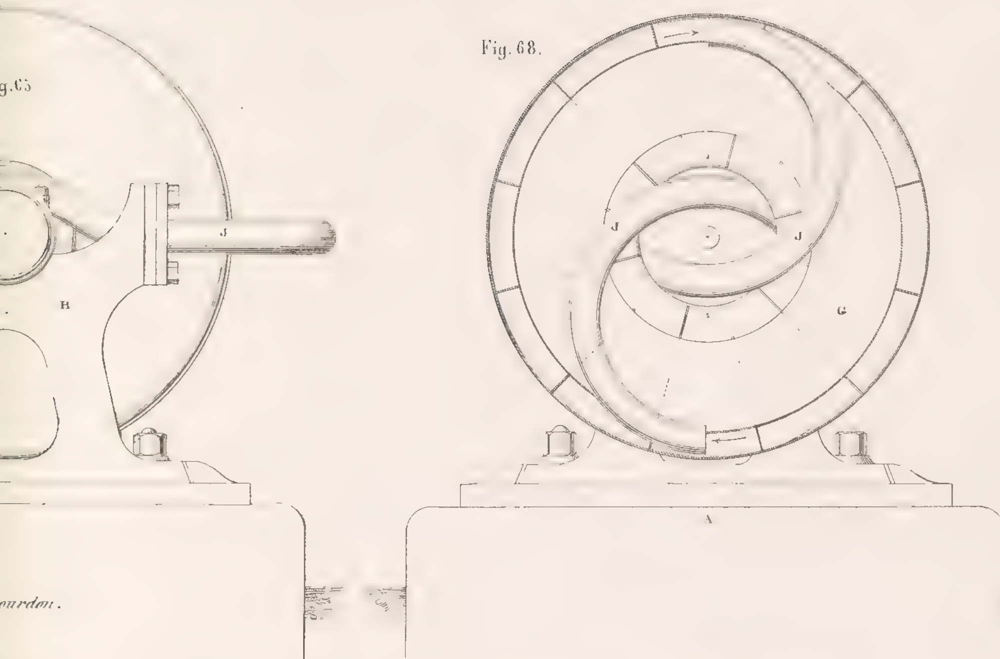
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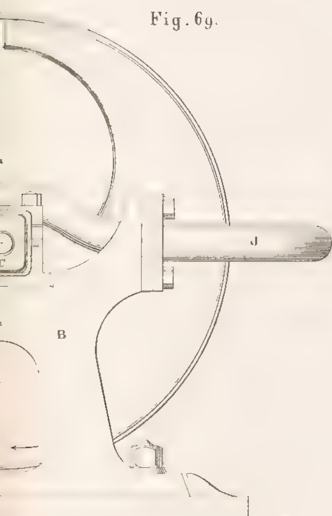


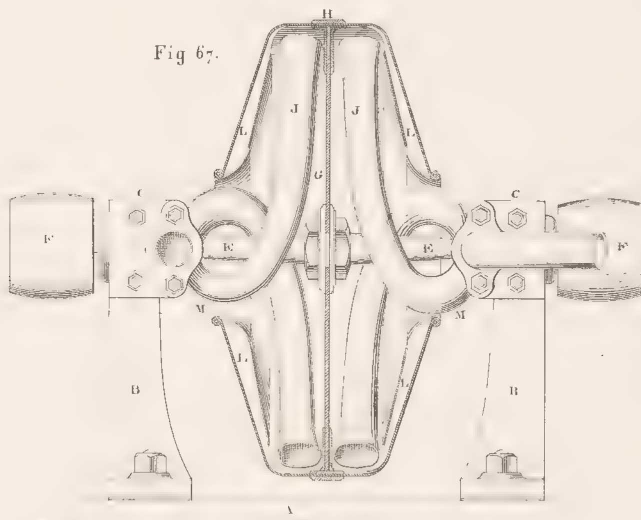
Système E



Echel

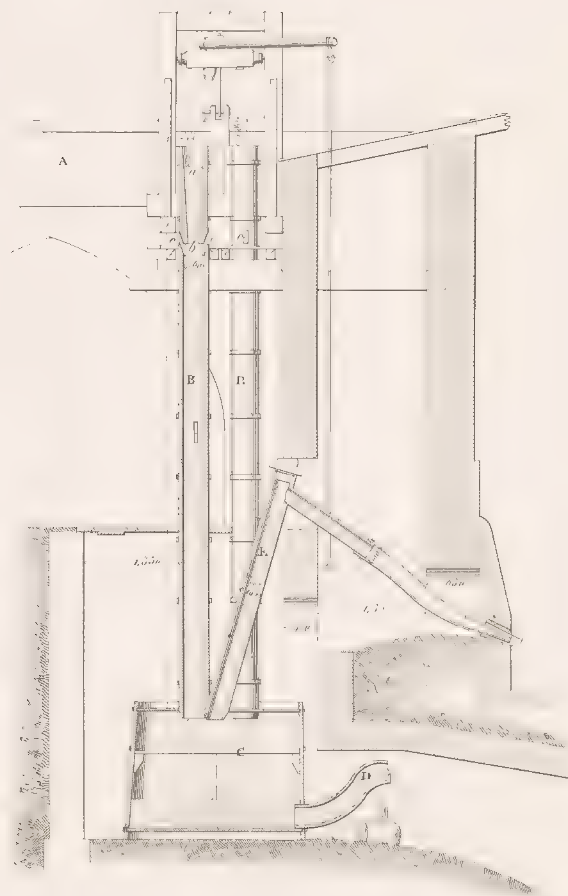

Fig. 68.
g. 65
J
B
G
A
ourdon.


Fig. 69.
J
B
le 1/10


Fig 67.
H
J
L
G
C
F
E
M
B
A

90-B-4428

Fig. 59.



Echelle 0,015 pour mètre

Fig. 60.

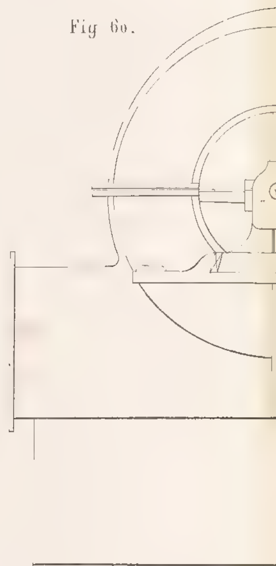
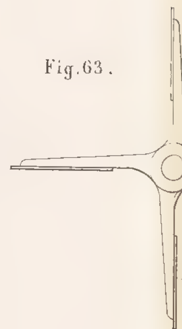
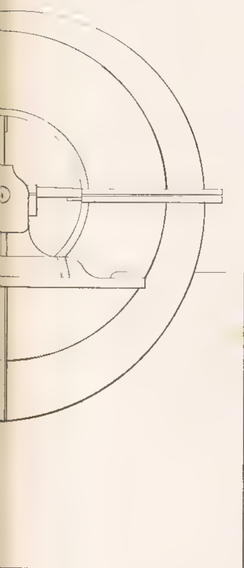


Fig. 63.



Echelle



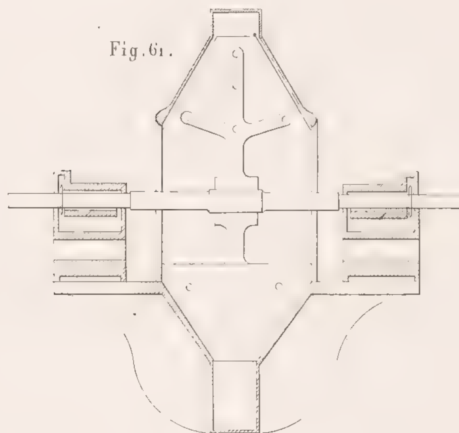


Fig. 61.

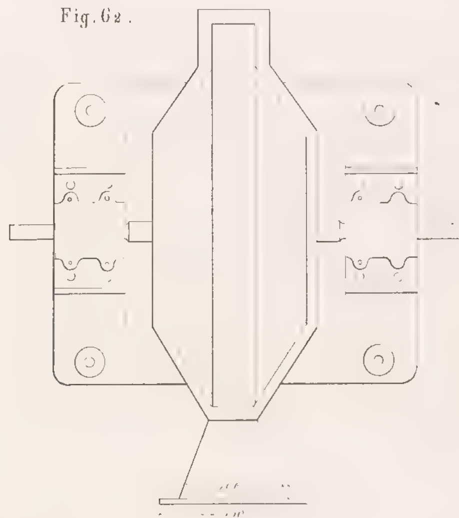
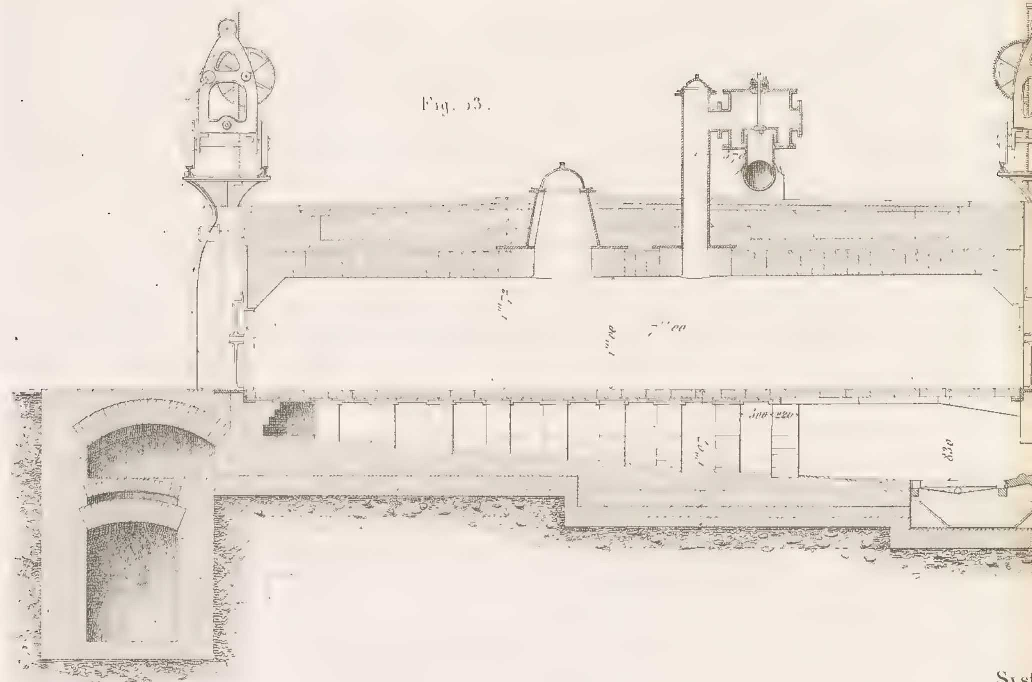


Fig. 62.

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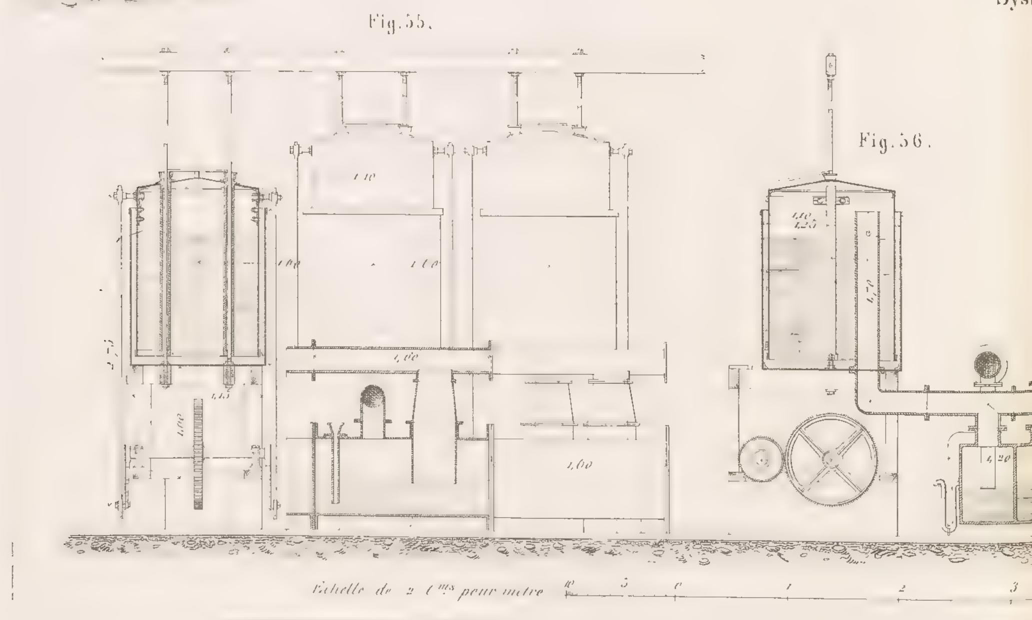
Fig. 53.



Syst

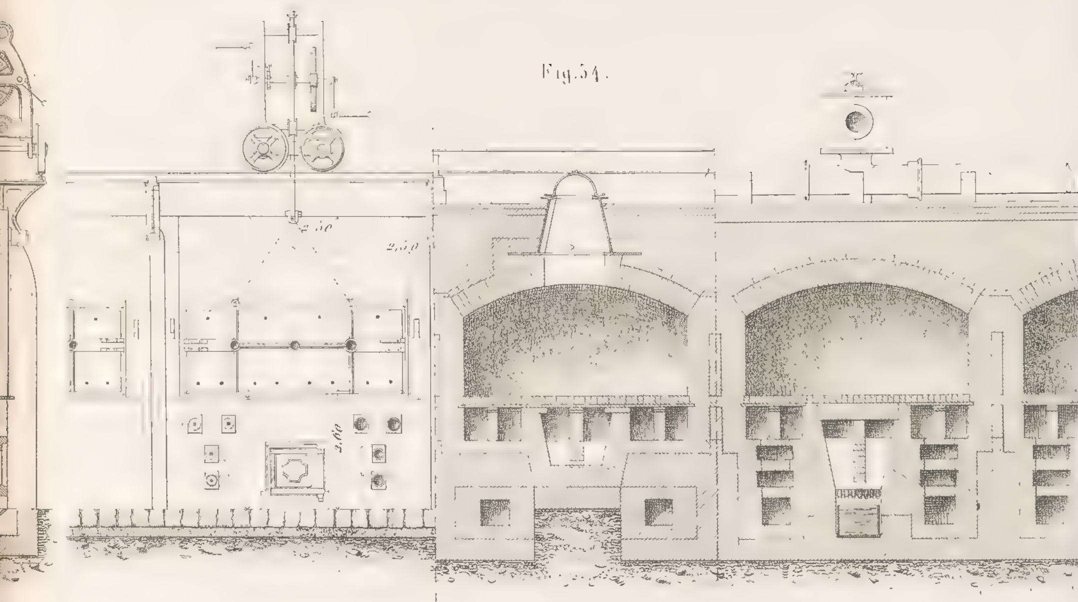
Fig. 55.

Fig. 56.



Echelle de 2 Cms pour mètre

Fig. 54.



ème Knab.

Fig. 57.

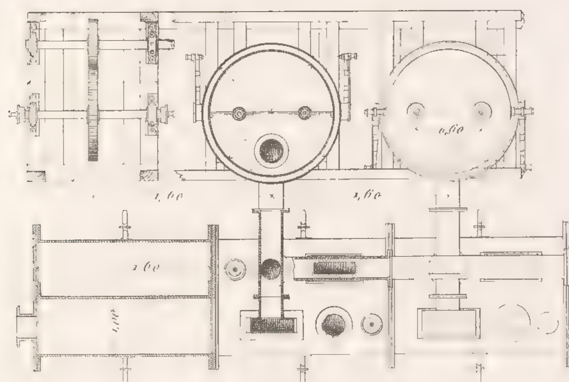
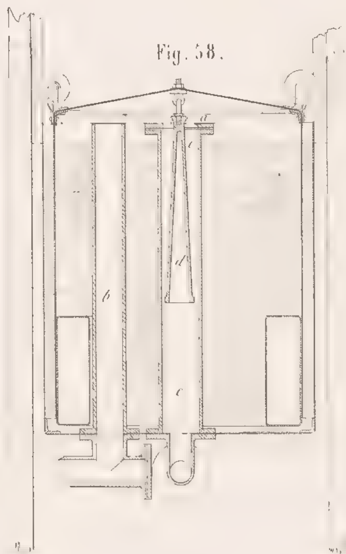


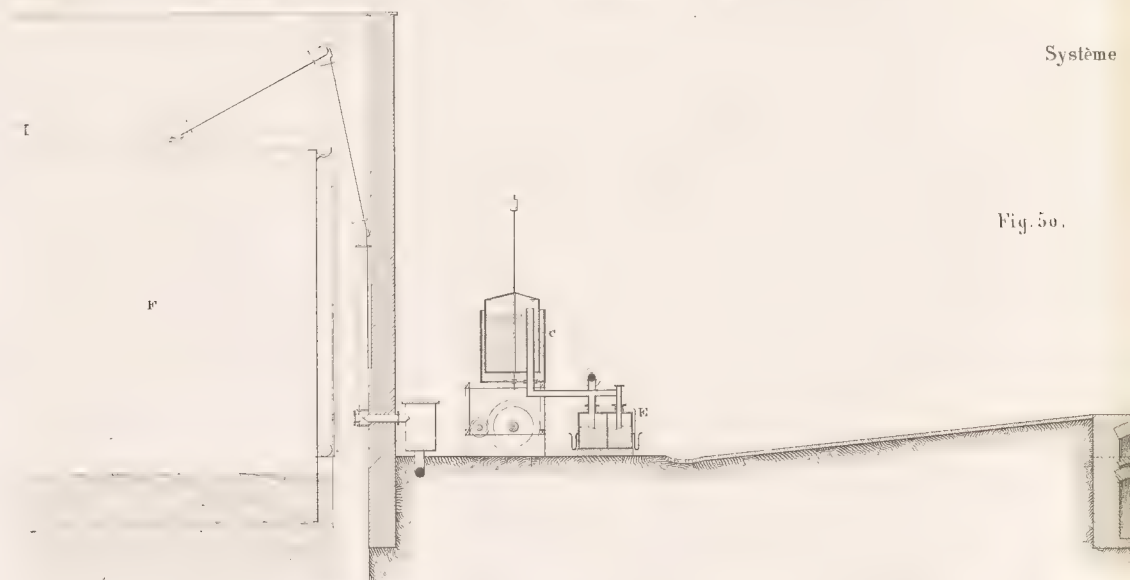
Fig. 58.

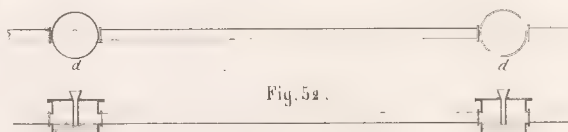


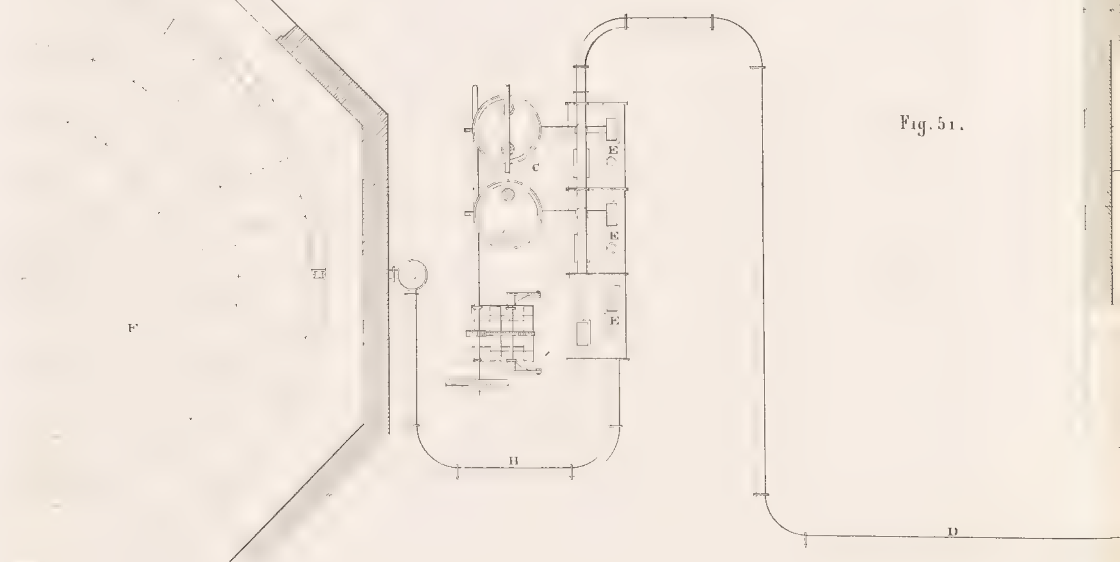
8 mètres

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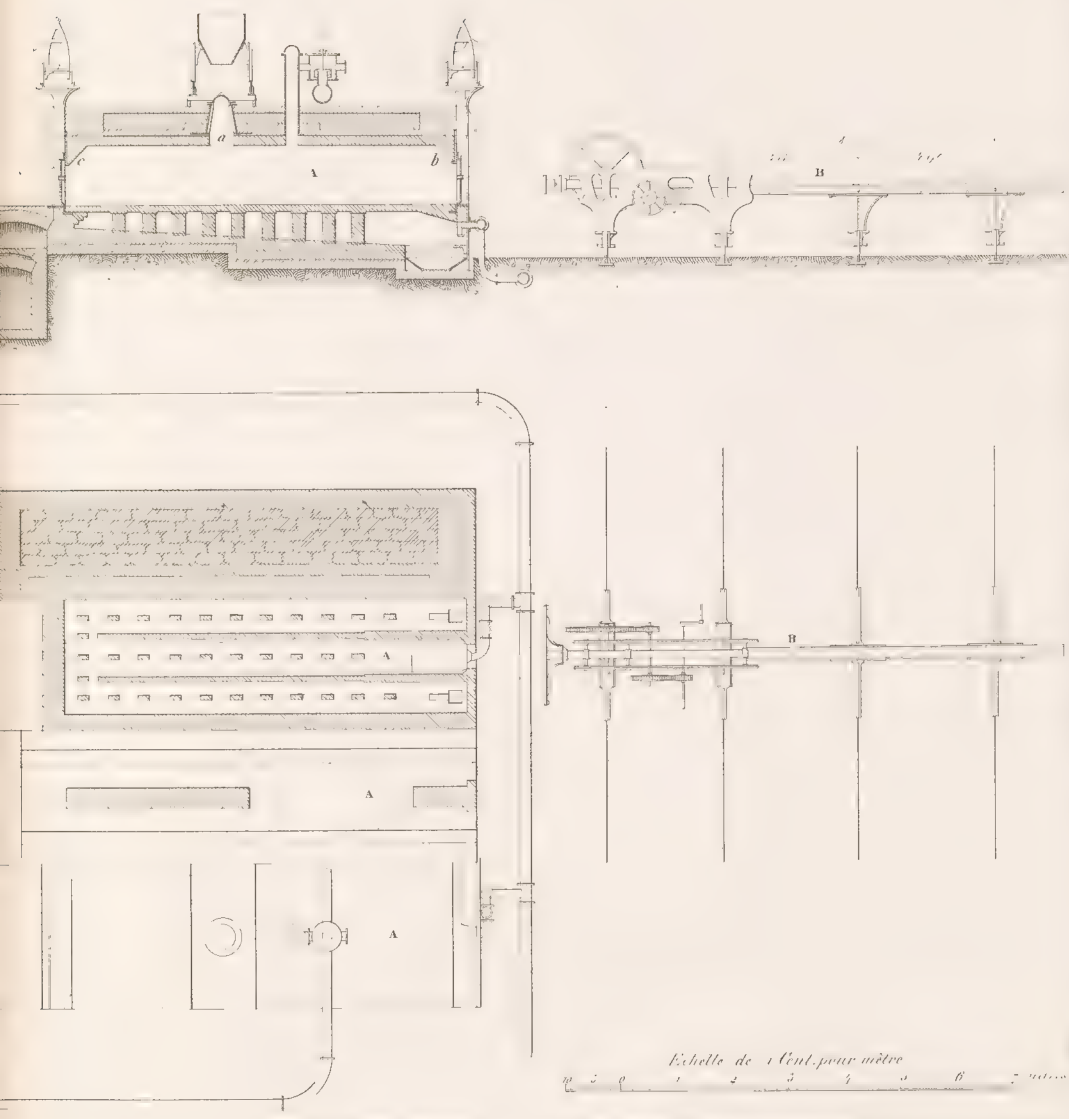
Système







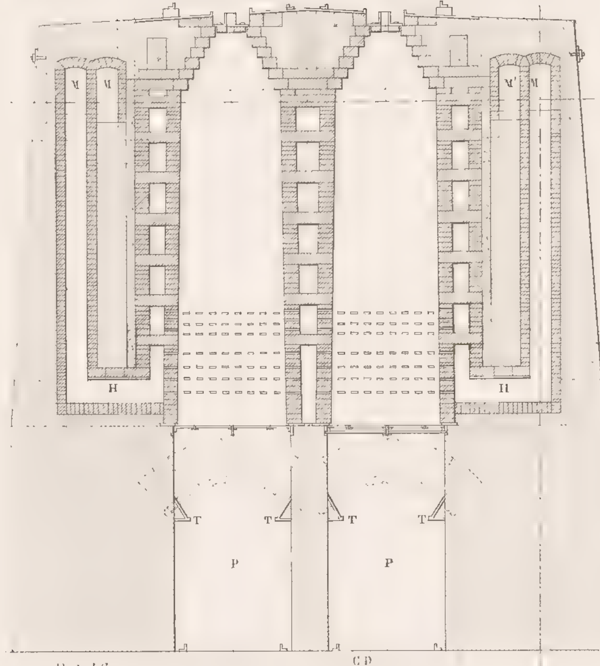
Knab.

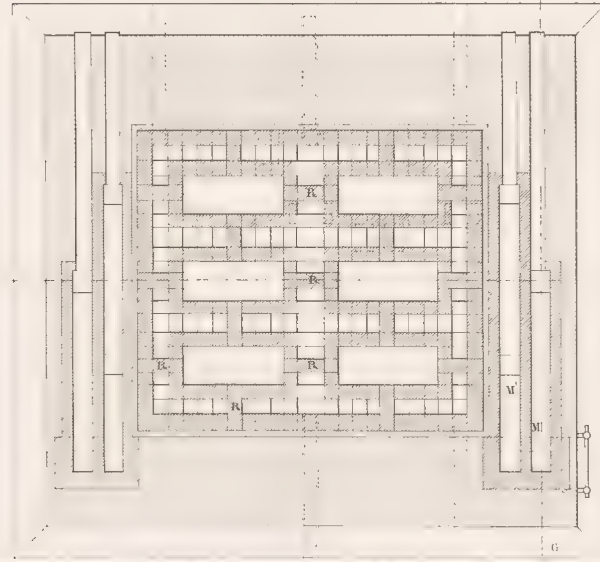


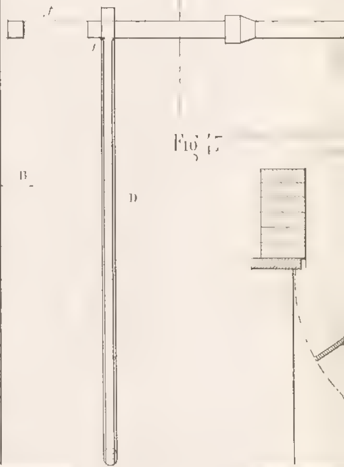
Noblet, Editeur.

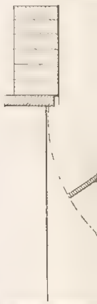
90-B 14488

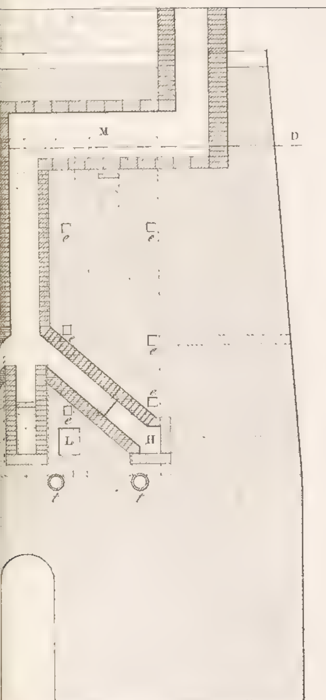
THE GETTY CENTER
LIBRARY

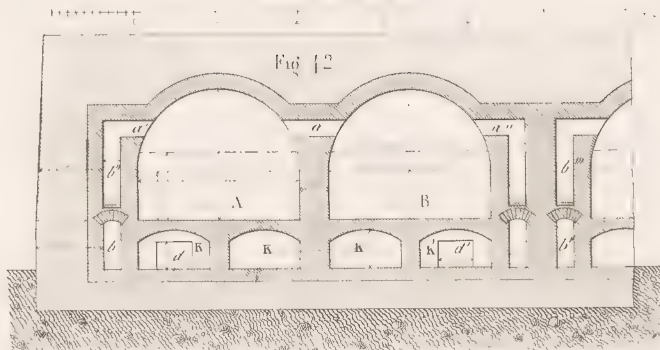

Fig. 44
Fig. 45
M
M'
H
T
P
L

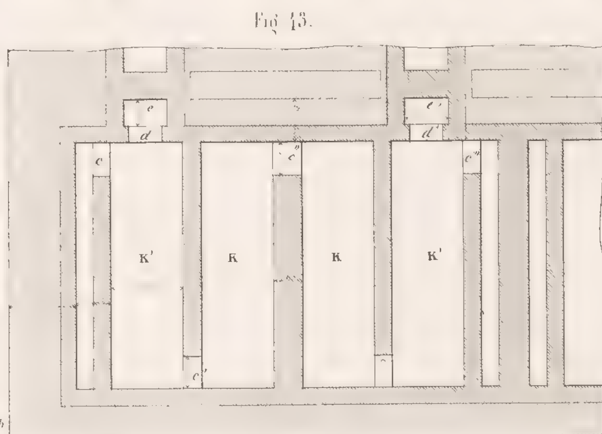

Fig. 46
R
M'
M


Fig. 49.
Fig. 47
D

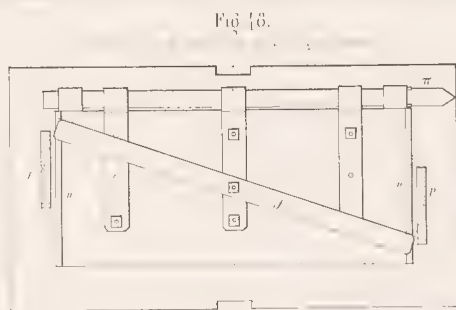


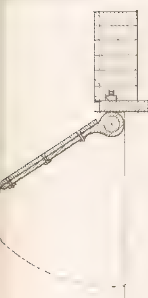

M
D
L
H


Fig. 12
A
B
K
K
K
K'


Fig. 13.
K'
K
K
K'

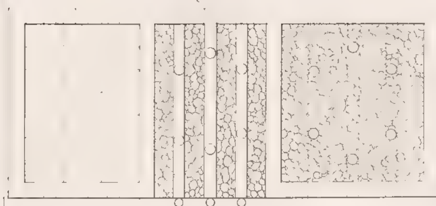


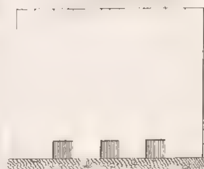

Fig. 18.

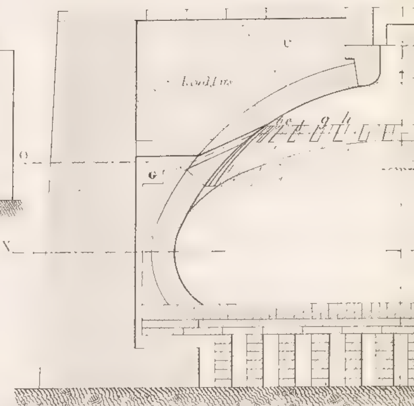


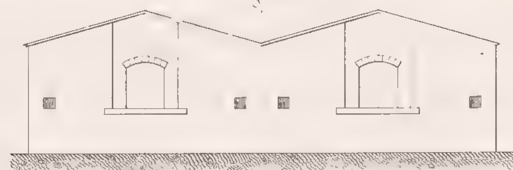
90-B-4488

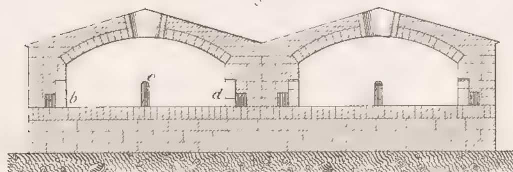
THE GETTY

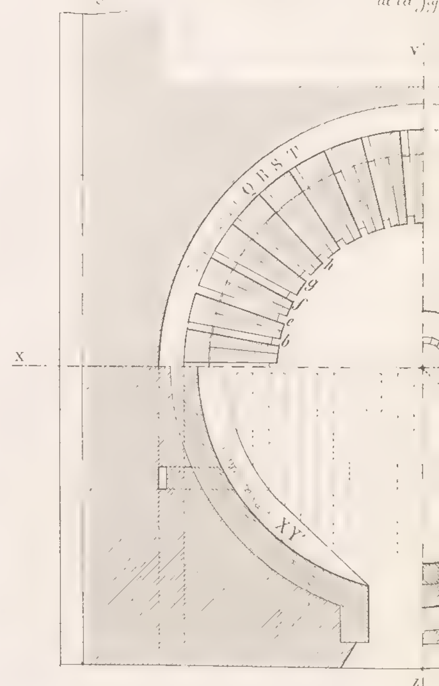

Fig. 33

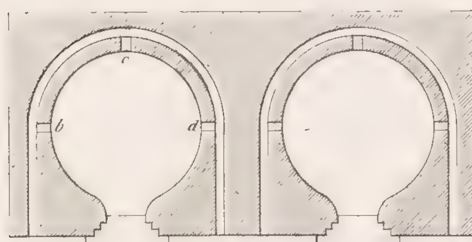

Fig. 34

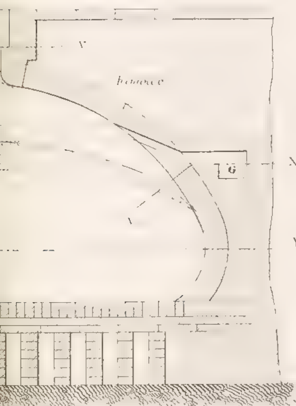



Fig. 35


Fig. 36
b
c
d


Fig. 38
X
XY


Fig. 37
c
b
d



différentes hauteurs

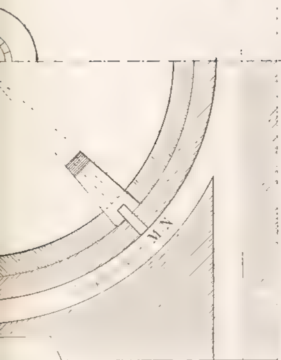
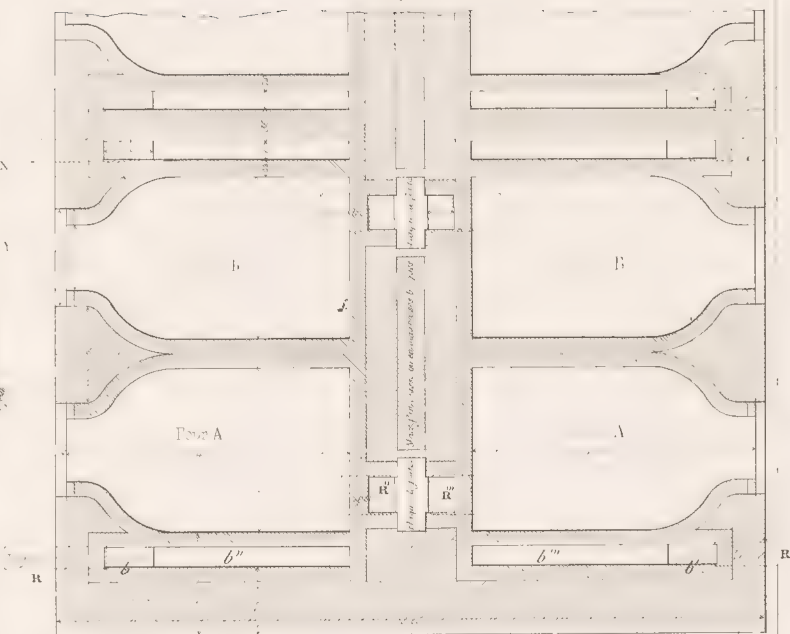


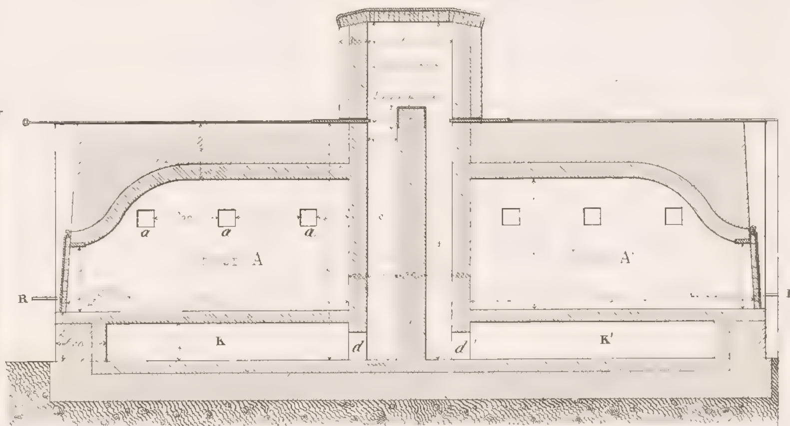
Fig 40



Grands Fours accouplés à sole chauffée

(1er système de Carbonisation)

Fig 41



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Systèm

Fig. 31

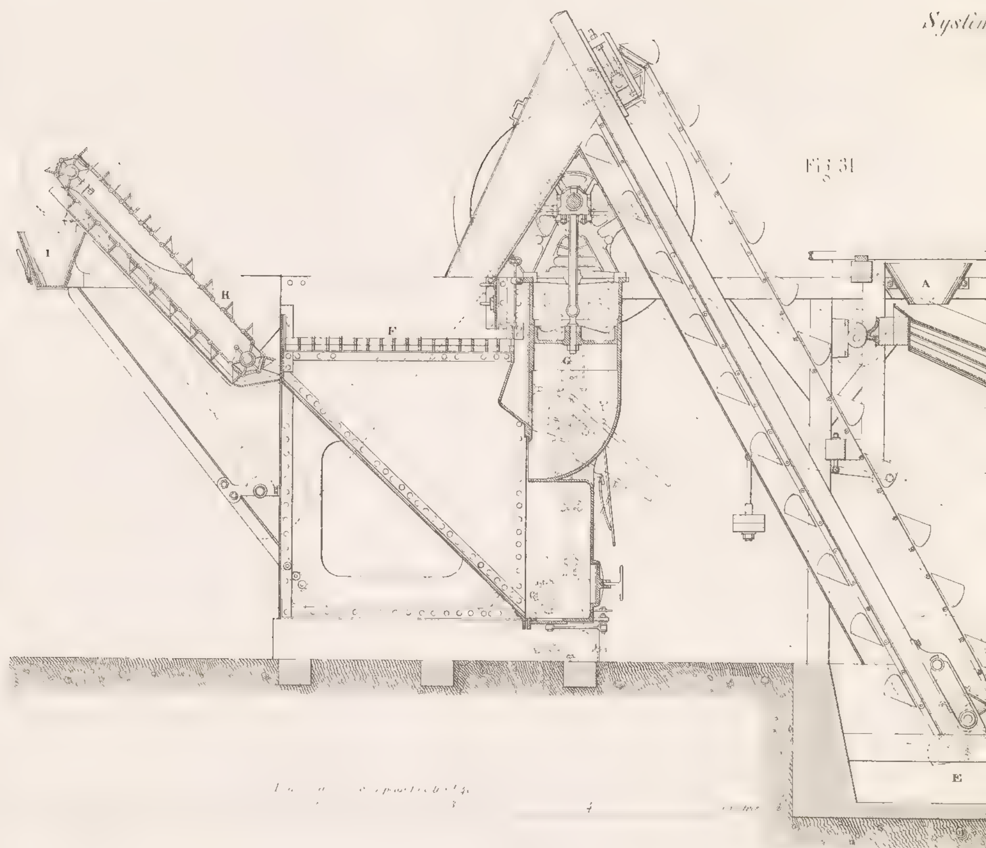
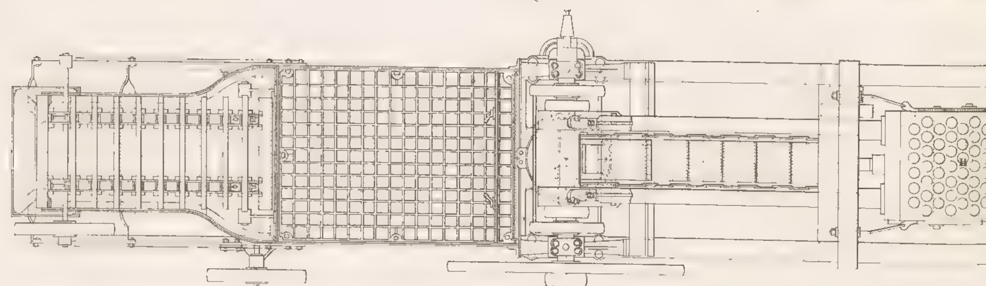
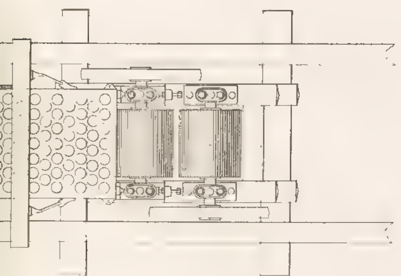


Fig. 32.



...ue Berard.



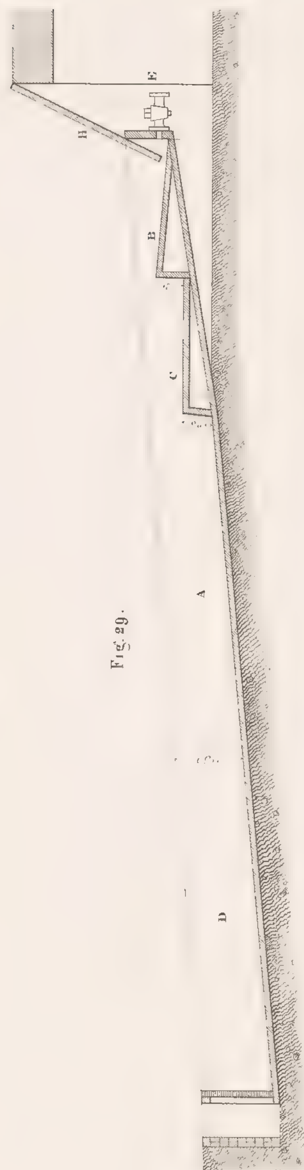


Fig. 29.



Fig. 30.

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Fig 12.

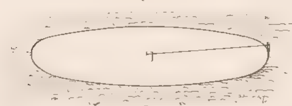


Fig 13.

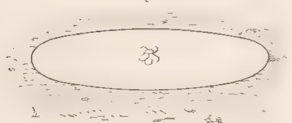


Fig 14.

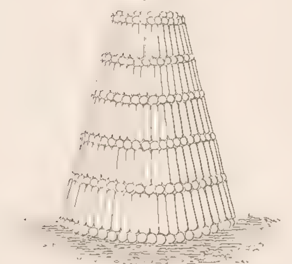


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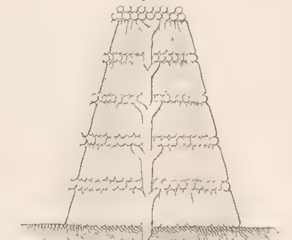


Fig 17.

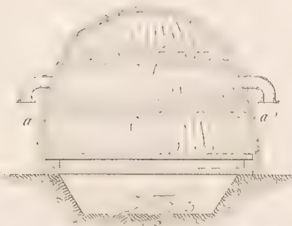


Fig 22.

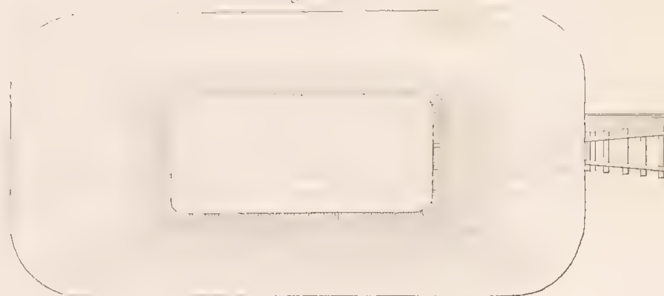


Fig 23.

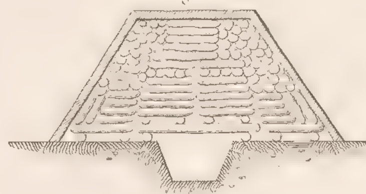


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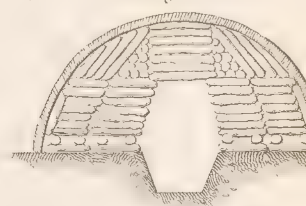


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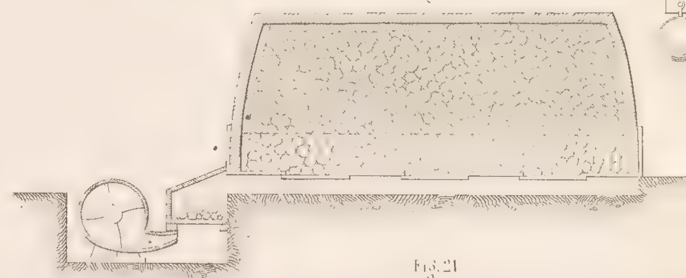
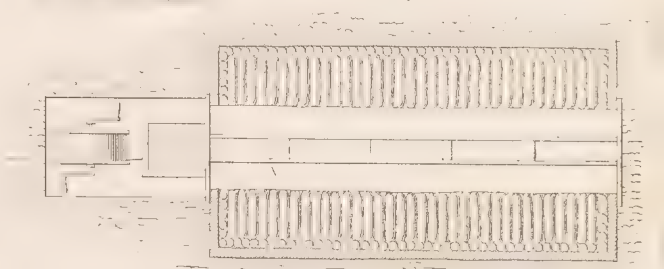
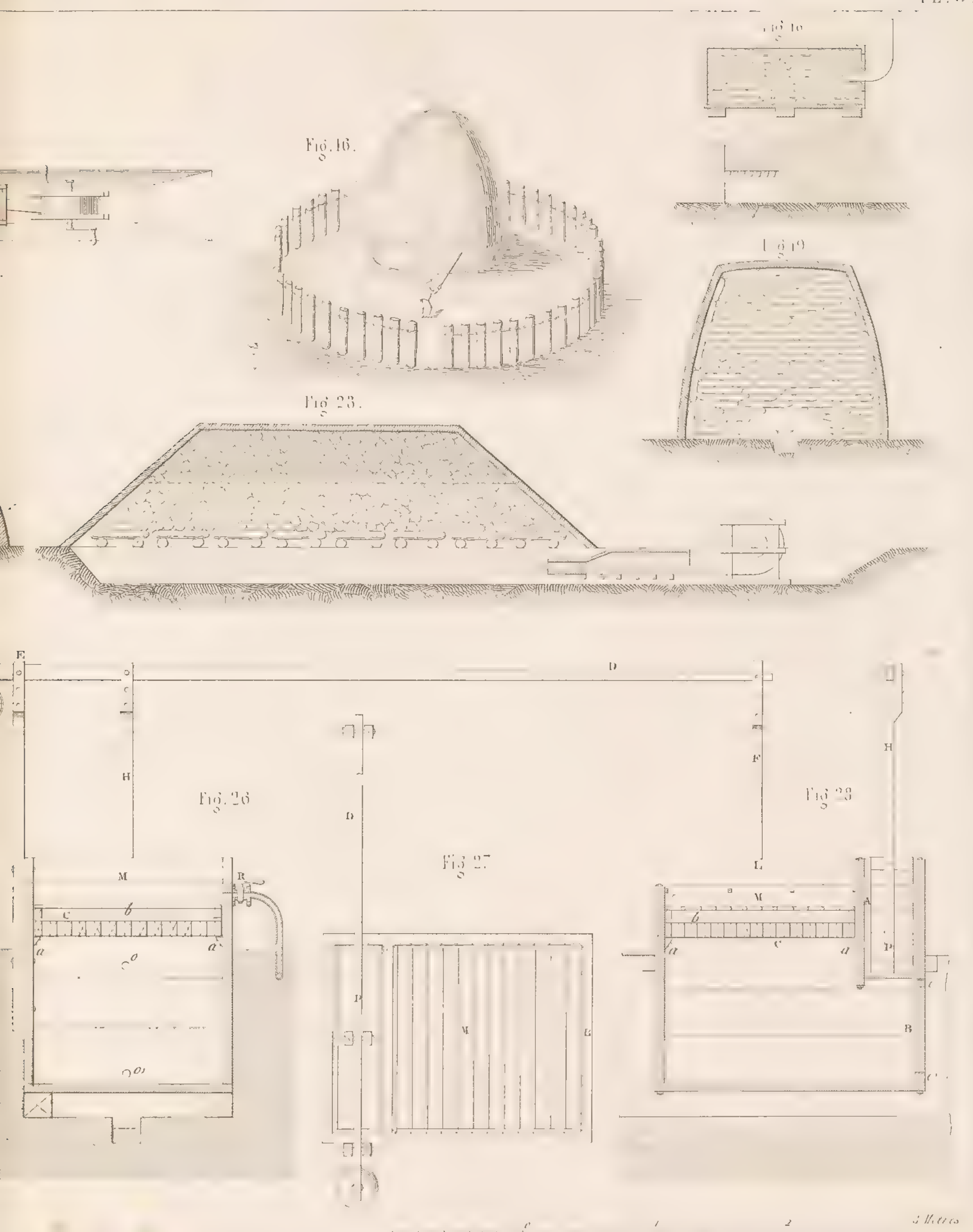


Fig 21.




Fig. 16.
Fig. 19
Fig. 23.
Fig. 26
Fig. 27
Fig. 28
M
R
b
c
a
a'
H
D
F
E
L
A
P
B
3 Mètres

Editeur

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Fig. 8

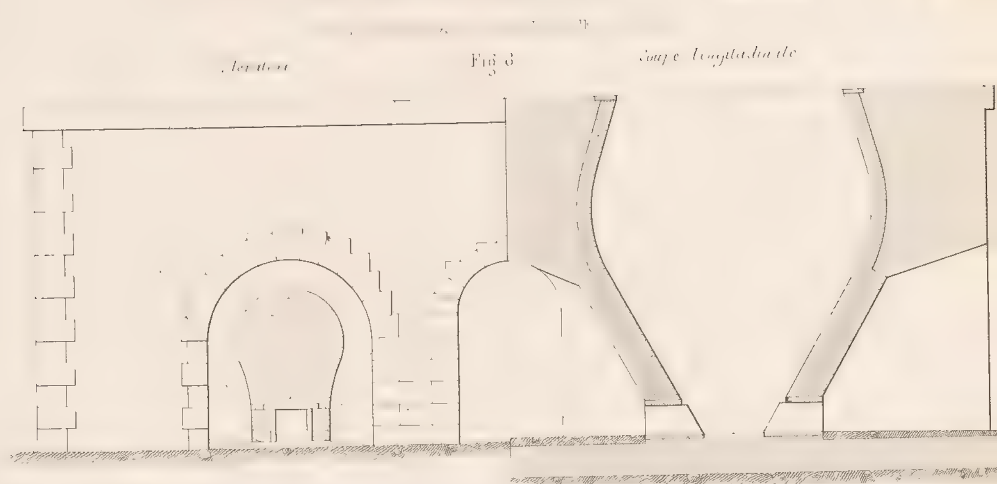
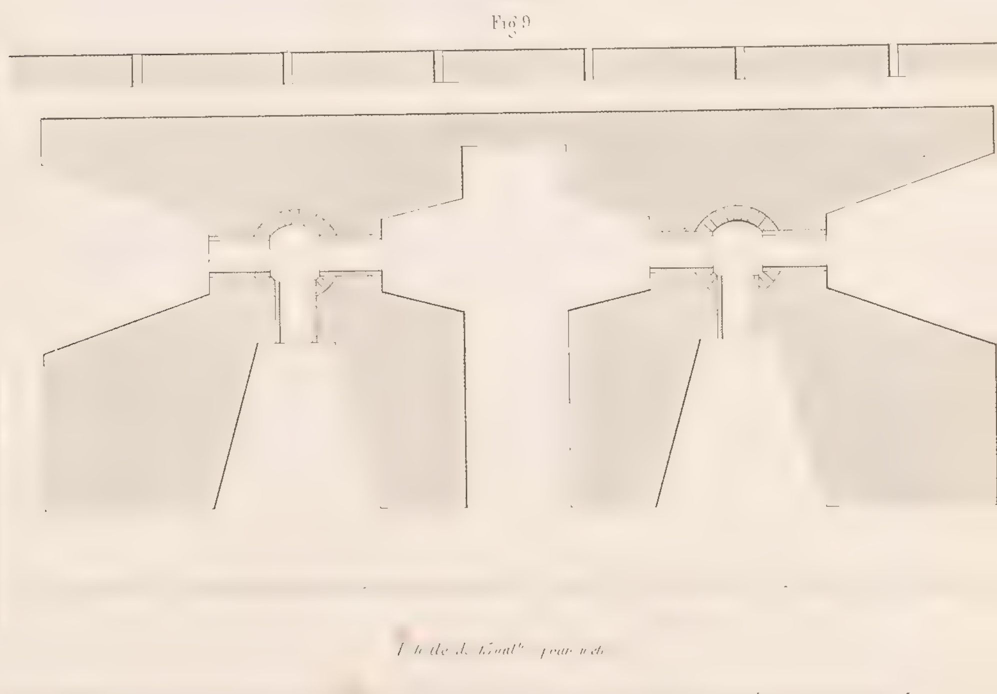
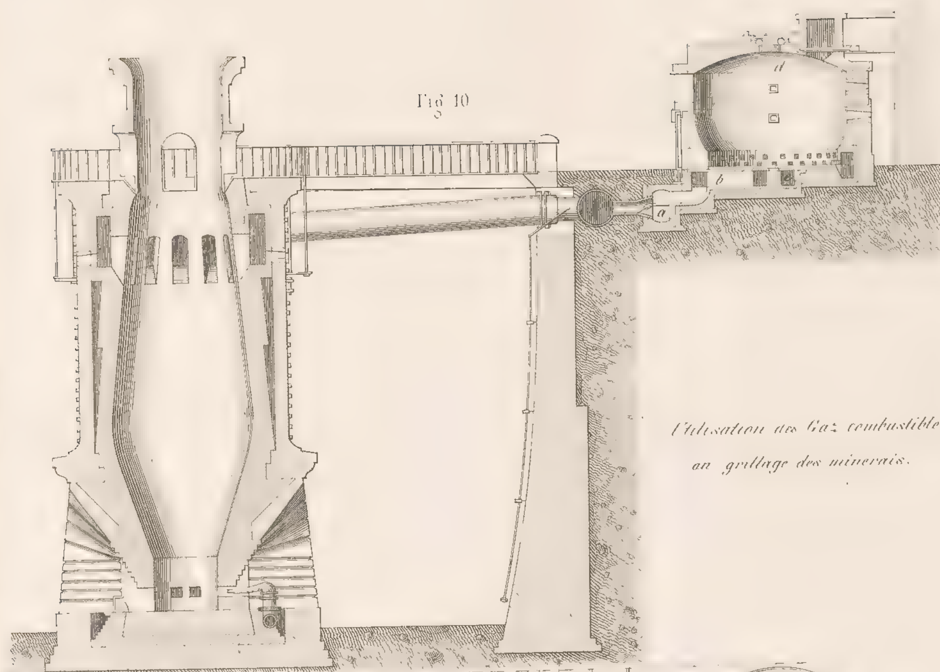


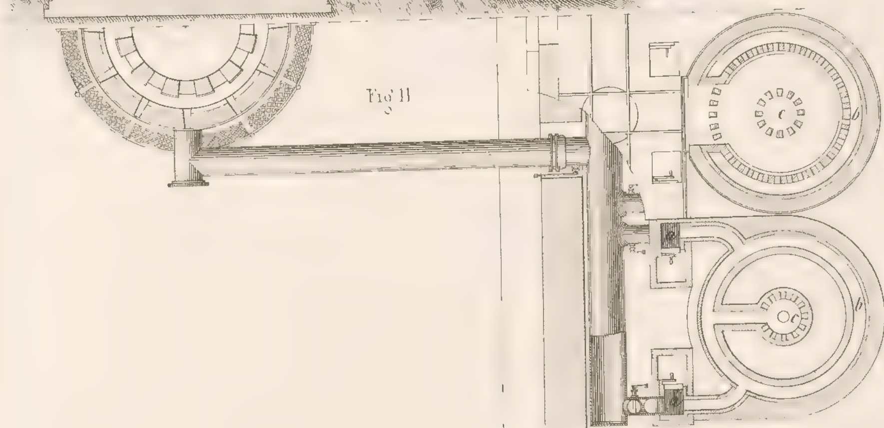
Fig. 9



Échelle de 1 cent^e pour mètre



Utilisation des Gaz combustibles au grillage des minerais.



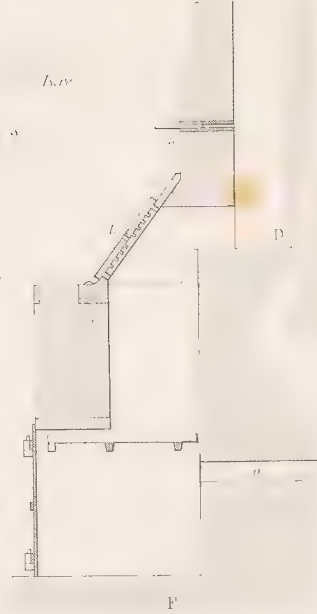
Cie de E. Noblet, Editeur.

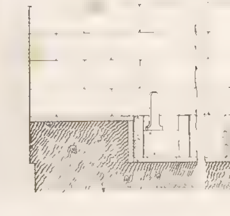
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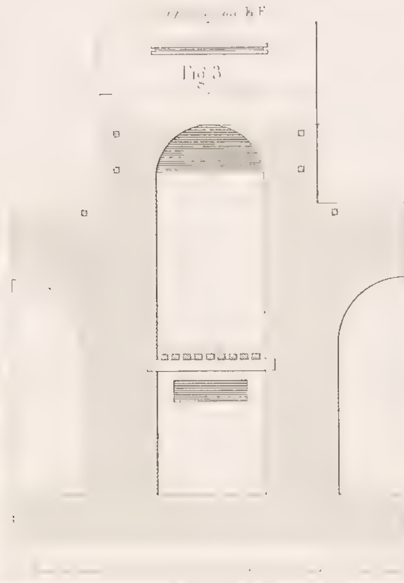
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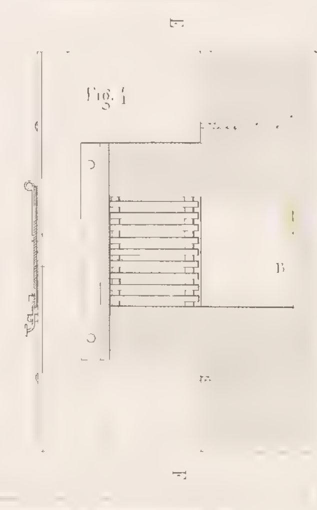
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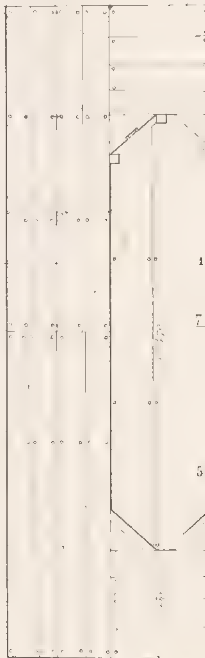






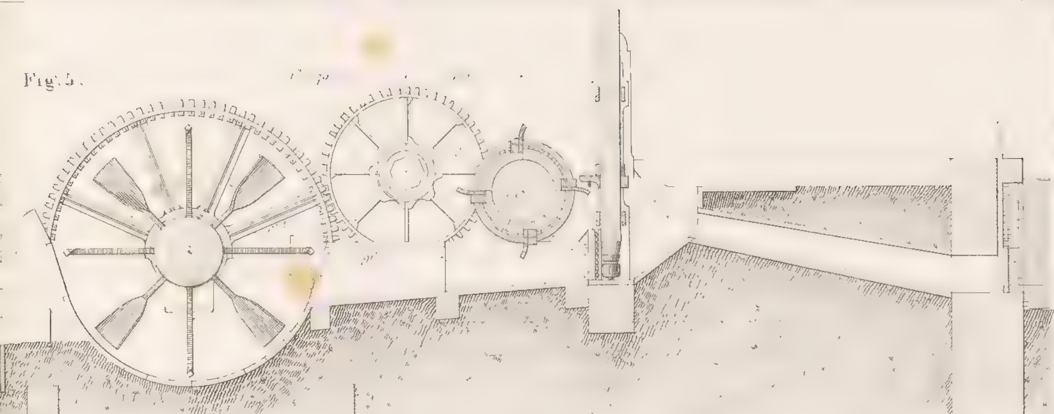


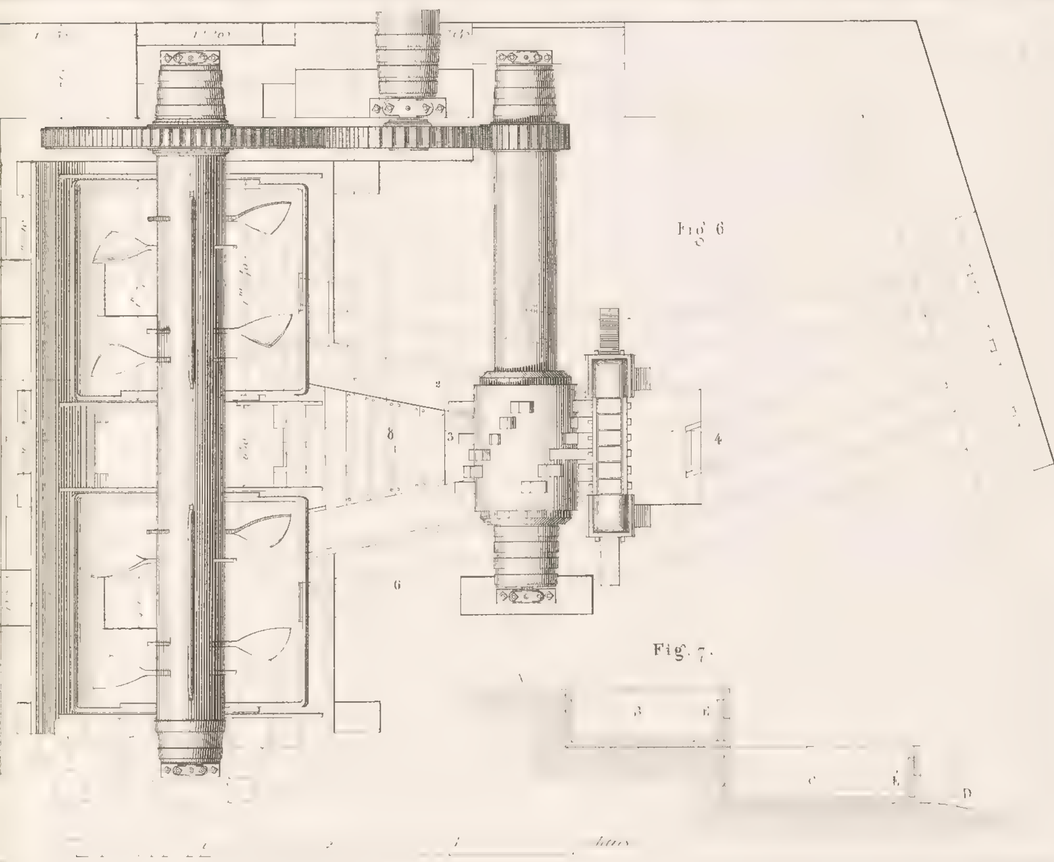




2 Mètres

Établ.t et im

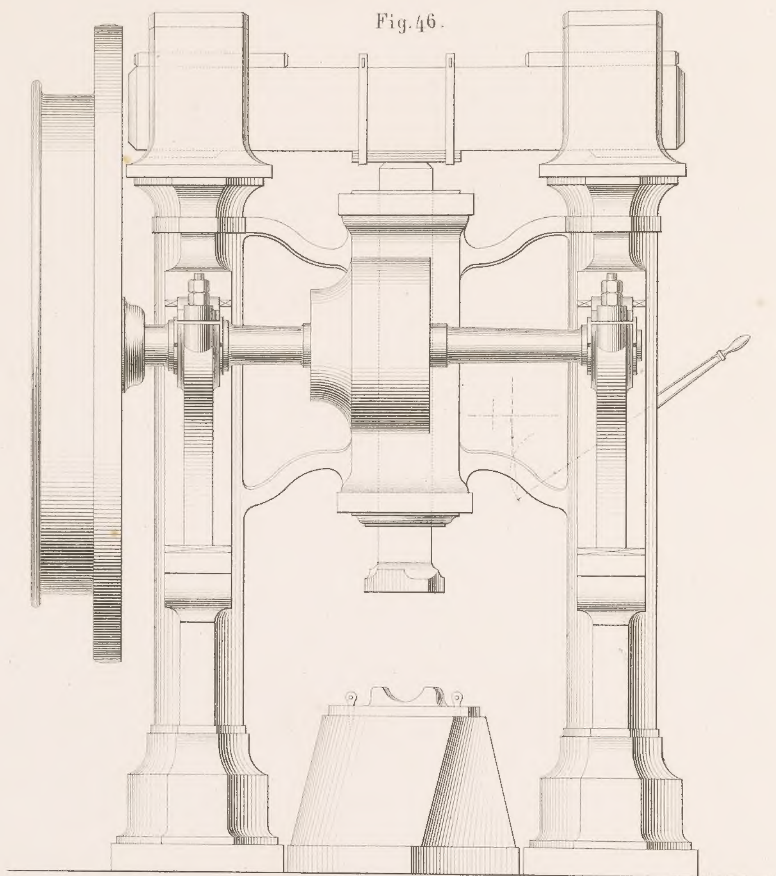




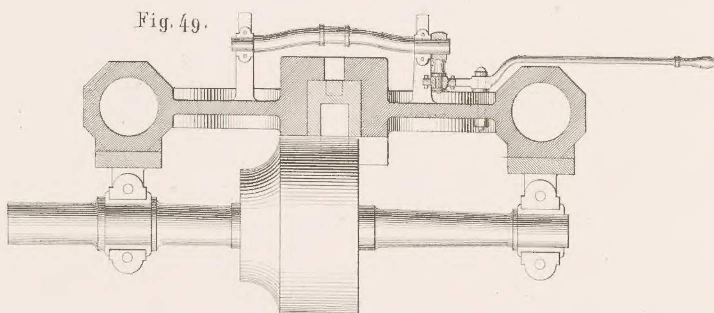
...de F. Noblet Éditeur

70-B 4488

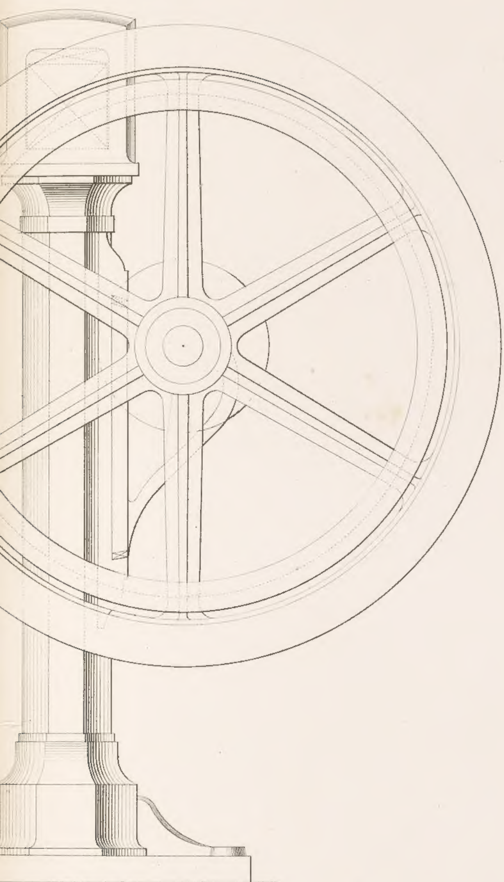
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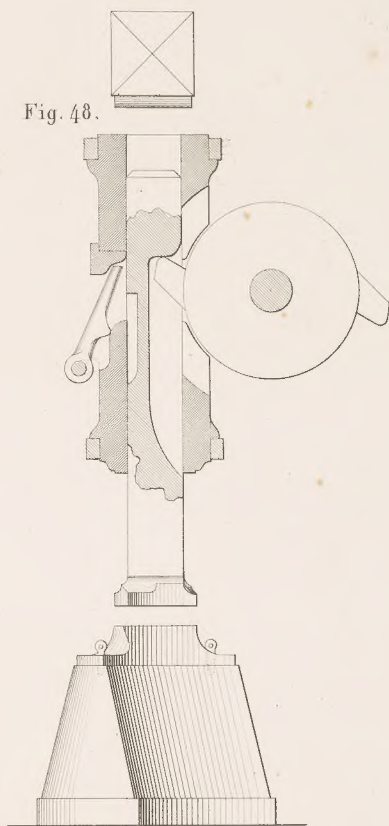


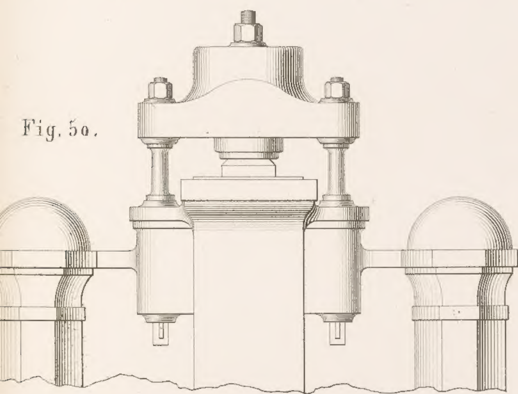




Etabl.t et impr.ie d







Système Farcot.

Echelle = 1/20
1 2 3 4 5 6 7 8 9 1 Mètre

E. Noblet, Editeur.

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